Energy security data and indicators at the IEA

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Short-term and Energy Security Data

October 9, 2025

Energy security data and indicators at the IEA

1. The role of the International Energy Agency in Energy Security
2. The need for timely, accurate and stable energy data
3. Energy Security Indicators

The role of the International Energy Agency in Energy Security

The 1973-4 oil crisis demonstrated the profound importance of oil to the global economy

The Arab-Israeli war prompted an oil embargo by OPEC that led to major fuel shortages and resulted in a global recession; the price of oil quadrupled from $2.90/bbl to $11.65/bbl.

The IEA was created in 1974 to co-ordinate collective responses to major disruptions in oil supply

Signature of the Agreement on an International Energy Programme (IEP) establishing the IEA, 18 November 1974.

First IEA meeting at Ministerial level, 27 May 1975

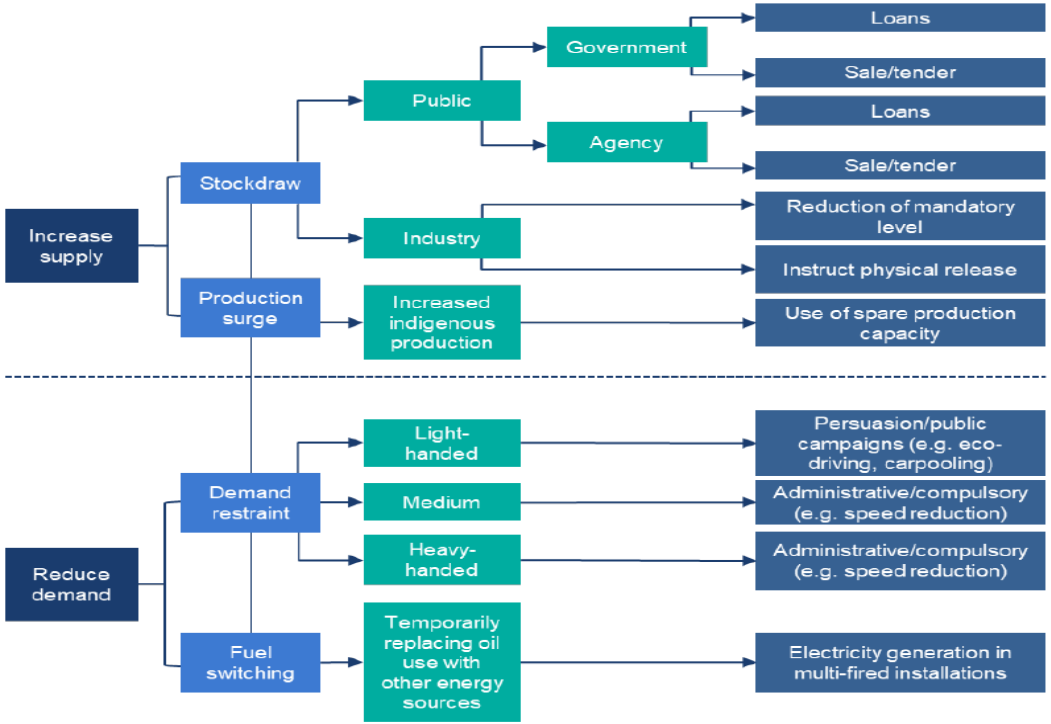
Oil security obligations of IEA Member countries

1. To hold **emergency oil stocks** at a level to ensure a total stock level equivalent to 90 days of net imports (Art 2.1, 2.2 IEP).

2. To maintain a set of **demand restraint measures** capable of reducing oil demand by up to 10% (Art 5.1 IEP).

3. To undergo **regular assessments** of their emergency stock levels, demand restraint measures and ability to contribute to a collective emergency response (Art 4.1,5.2 IEP).

IEA Member country emergency response measures



IEA members have both supply and demand measures to help disrupted oil markets re-balance

The need for timely, accurate and stable energy data

Why collect short-term energy data? The case of oil

IEA says oil markets 'well supplied' after attack in Saudi Arabia

Cameroon's only oil refinery halted, four units damaged after fire

Storm Barry cuts half U.S. Gulf Coast oil output, flooding fears close coastal refinery

Poland releases 800,000 tonnes of oil reserves after Russian imports halted

Gigantic Druzhba oil pipeline paralyzed for weeks

Contaminated crude oil from Russia is clogging the main delivery route for several EU countries. Belarus, Poland and Germany are particularly affected and the real financial consequences are still completely unclear.

Fire halts operations at Pemex's Salina Cruz refinery

Hurricane Harvey Forces Even More Texas Oil Refineries To Close

Oil rises as Kuwaiti strike cuts output for third day

Saudi attacks: Oil price to spike as production halves

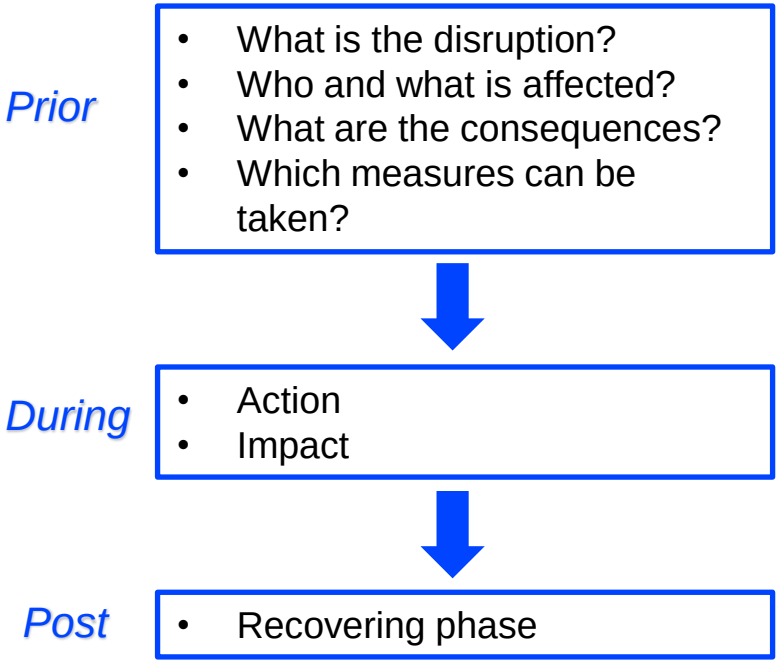
The kingdom's oil production has dropped by 5.7 million barrels a day after Saturday's drone strikes on two processing facilities.

Alberta wildfires prompt oil firms to suspend production and evacuate staff

At least 233,000 barrels per day of oil sands production have been halted as government of Canadian province says 66 forest fires are burning

Shell Nigeria Declares Force Majeure On Nigerian Light Oil Exports

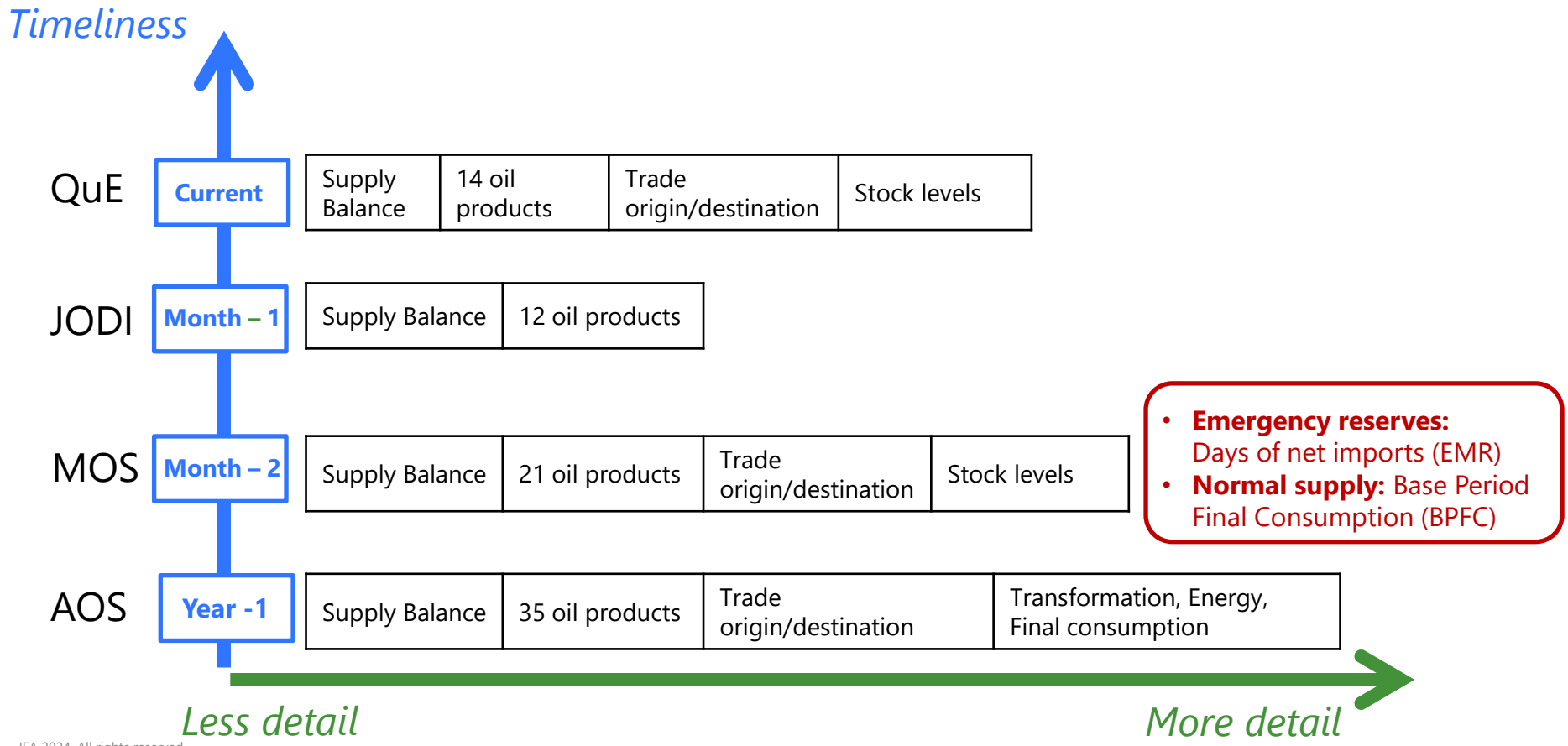
Role of data in case of crisis?



- **Regular data – IEA Oil Data System**
  - The need to maintain an up-to-date data system of the oil situation in member countries.

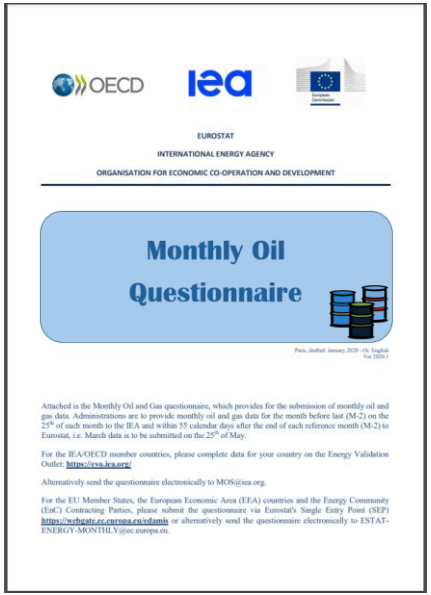
- **Emergency data collection**
  - The need to collect early additional and more focused data in case of emergency.

IEA oil data and emergency collection systems



MOS - Data needed for assessment

Monthly Oil Questionnaire (MOS)



OECD IEA

EUROSTAT

INTERNATIONAL ENERGY AGENCY

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Monthly Oil Questionnaire

Paris, drafted: January 2020 - En. English
Ver 2020.1

Attached is the Monthly Oil and Gas questionnaire, which provides for the submission of monthly oil and gas data. Administrations are to provide monthly oil and gas data for the month before last (M-2) on the 25th of each month to the IEA and within 55 calendar days after the end of each reference month (M-2) to Eurostat, i.e. March data is to be submitted on the 25th of May.

For the IEA/OECD member countries, please complete data for your country on the Energy Validation Outlet: https://evo.iea.org/

Alternatively send the questionnaire electronically to MOS@iea.org.

For the EU Member States, the European Economic Area (EEA) countries and the Energy Community (EnC) Contracting Parties, please submit the questionnaire via Eurostat's Single Entry Point (SEP) https://webgate.ec.europa.eu/edamis or alternatively send the questionnaire electronically to ESTAT-ENERGY-MONTHLY@ec.europa.eu.

Comprehensive supply side data

Provides overview and understanding of domestic market
(e.g. in crisis, capacity requirements, consumption trends)

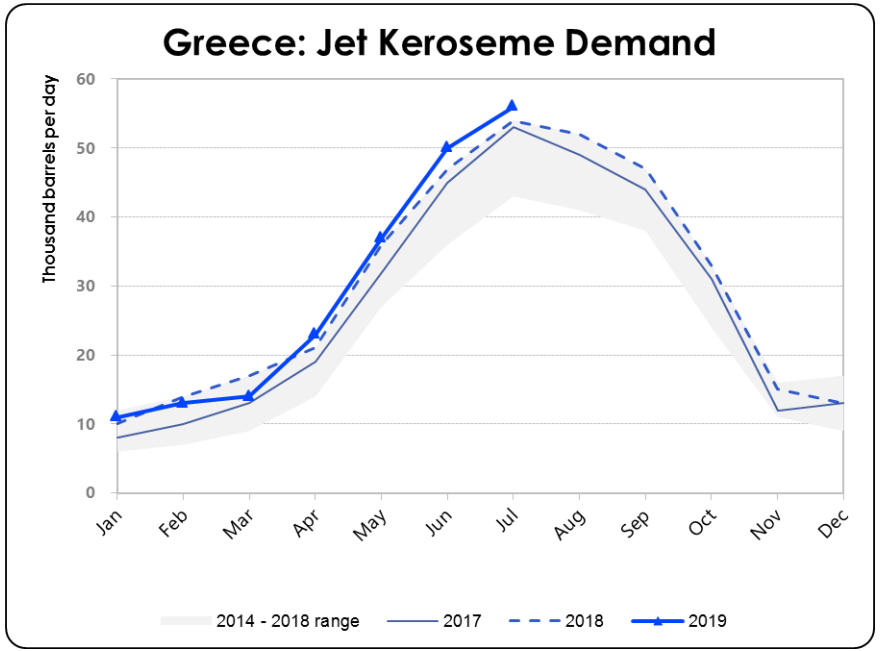
Basis for assessing country's oil stock situation and ability to contribute to an IEA collective action
Net import obligation
Monthly days coverage compliance

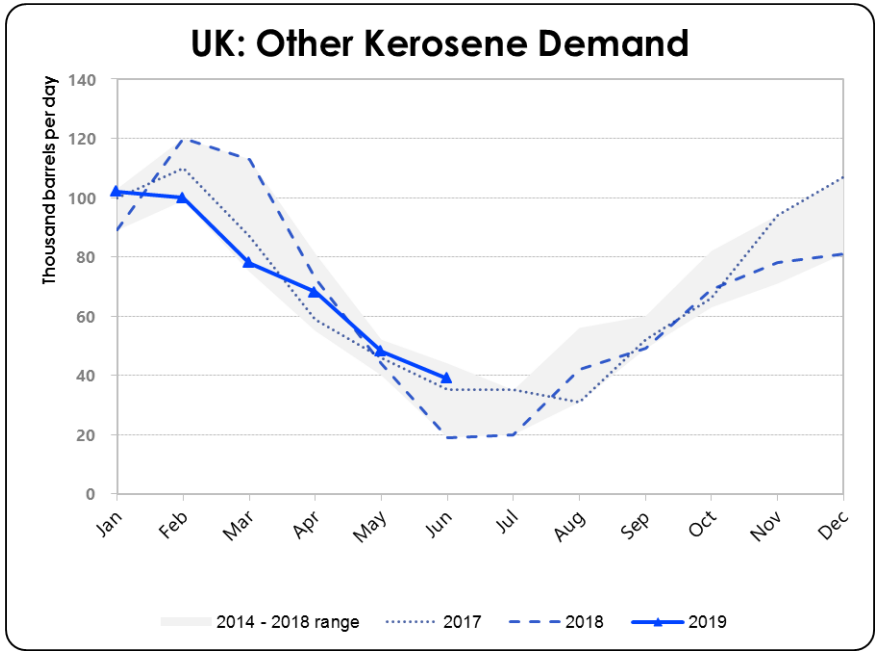
Timely data
includes revisions - M-2

Emergency coverage assessment based on monthly oil data collected through the MOS

Why collect monthly oil data – Data analysis

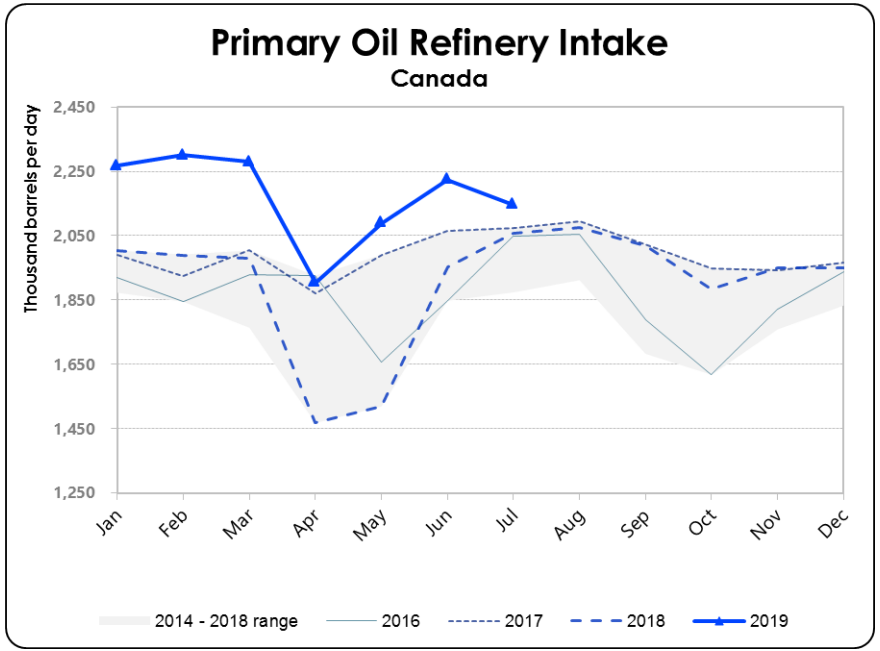
- Seasonality

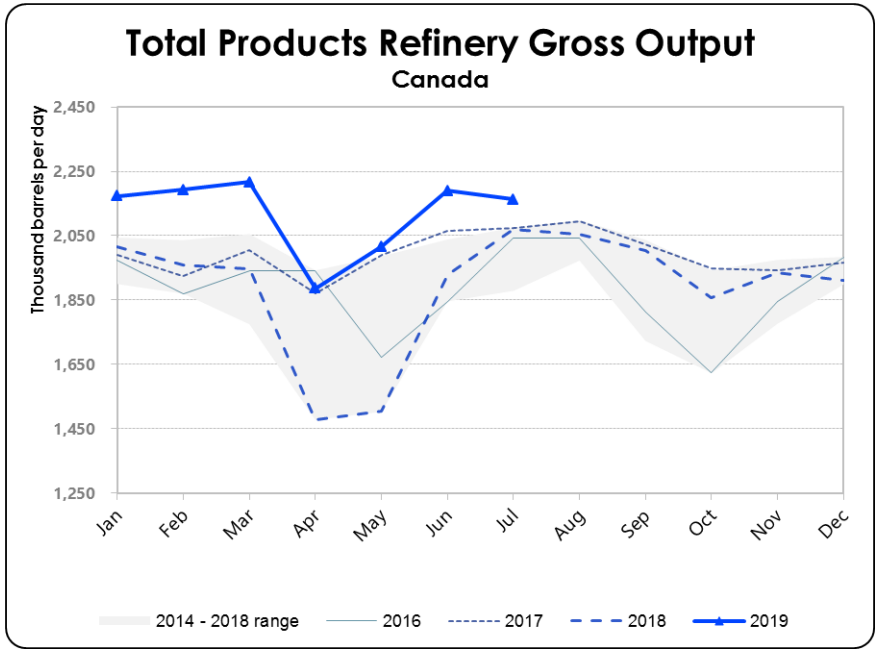




Why collect monthly oil data – Data analysis

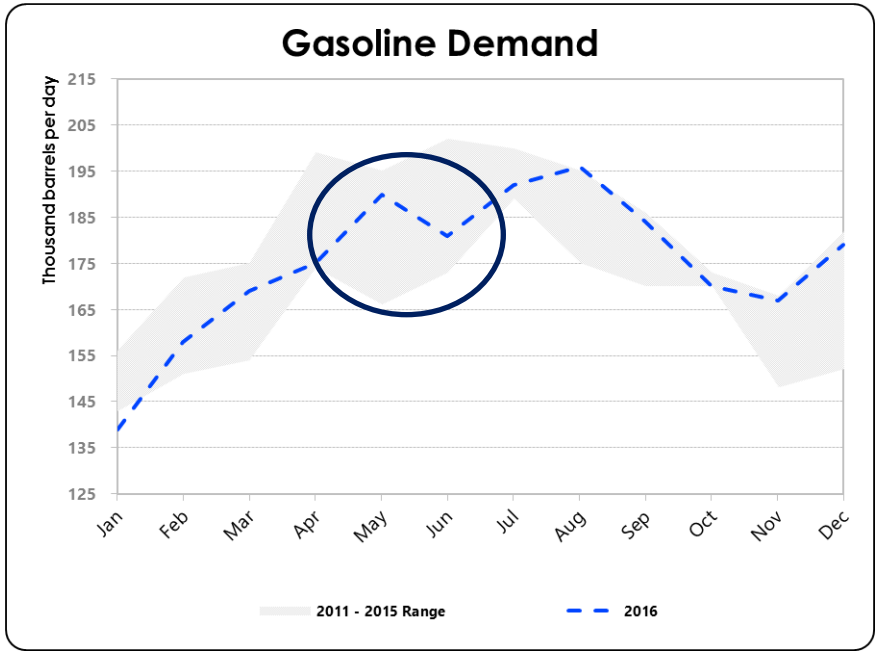
- Scheduled maintenance

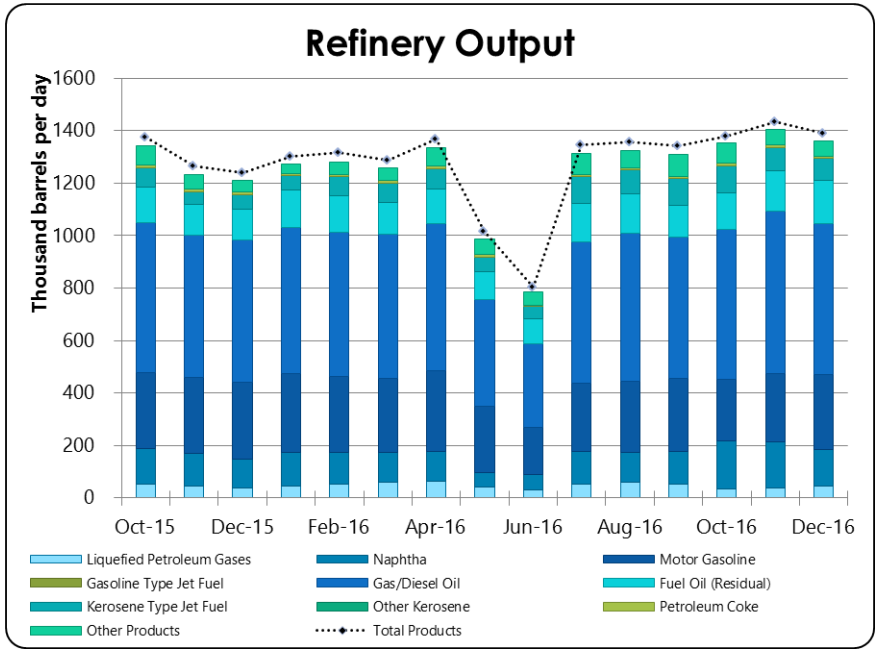




Why collect monthly oil data – Data validation

- Detailed visualization of the effects of unplanned events
  - Example: France 2016 - Impact of strike on oil markets / oil industry





The need for short-term energy security data

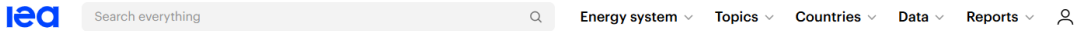
IEA Emergency response system is data driven

- Market monitoring
  - Supply and demand (normal baseline; crisis conditions)
  - Trade flows
- Country assessments
  - Energy system resiliencies
  - Ability to meet IEP requirements
- Compliance with stockholding requirement
  - Monthly stock levels
  - Previous year's net imports
- Collective action – country shares
  - Detailed consumption on most recent 4-quarters

Monthly oil statistics (MOS) submissions from Member Countries is basis for IEA emergency system

Energy Security Indicators

Oil Stocks in days of net imports



Oil Stocks of IEA Countries

Measured in days of net imports, updated each month with the release of the Oil Market Report

Last updated
13 Aug 2025

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Overview

One of the IEA's core activities is ensuring the security of oil supplies by setting stockholding requirements for member countries

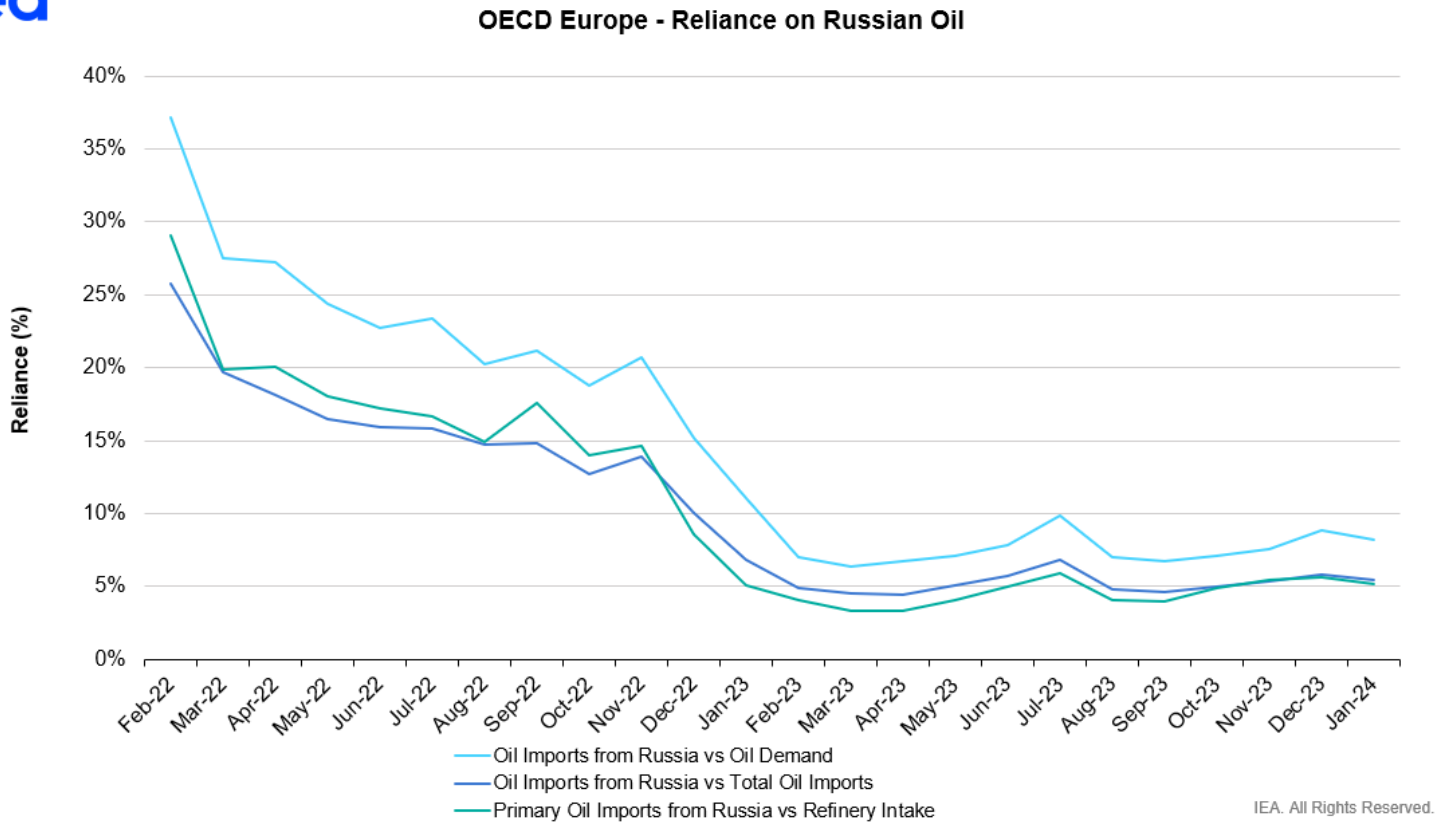
Month: **June**

Year: **2025**

Norway	Net exporter	0	0	0	0
Poland	123	88	35	0	0
Portugal	117	63	55	3	21
Slovak Republic	165	77	87	0	0
Spain	97	57	40	2	0
Sweden	173	173	0	15	0
Switzerland	169	169	0	9	0
Turkiye	95	95	0	0	0
United Kingdom	118	118	0	16	0
Total IEA Europe	**130**	**77**	**54**	-	-
Total IEA	**621**	**389**	**232**	-	-
Total IEA net importers	**141**	**79**	**62**	-	-

Days of net imports for regional totals include IEA net importers only.

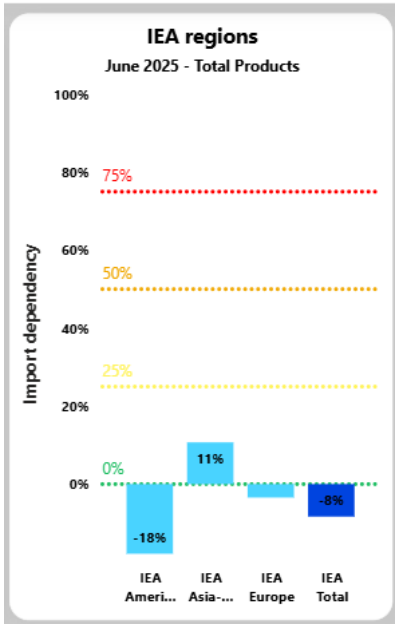
Specific indicator - Reliance on Russian Oil

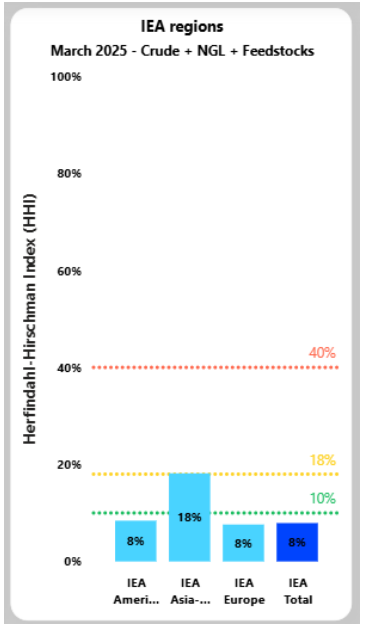


Oil & Gas security indicators

- **Import dependency:**
  - Measures how much of a country's total oil/gas consumption is met through imports.
  - High dependency implies stronger exposure to external supply shocks or geopolitical events.

- **Supply diversity:**
  - Evaluates the concentration or diversification of oil/gas import sources.
  - Calculated using the Herfindahl–Hirschman Index (HHI)
  - Lower values = diversified and secure supply; higher values = concentrated and risk-prone.

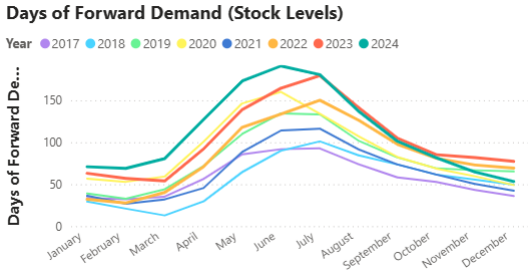


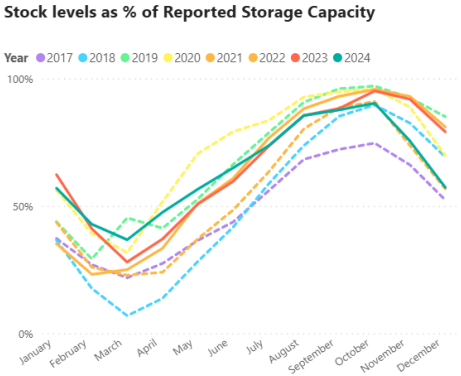


Oil & Gas security indicators

- **Storage and stocks**
  - Storage capacity and stock levels in days of forward demand - *Indicates how long domestic demand could be met from stocks.*
  - Storage fill level. Stocks levels as % of reported storage capacity - *reflects seasonal preparedness and readiness for demand surges.*
  - Gross inland deliveries in relation to storage and withdrawal capacity - *Assesses whether storage deliverability can supplement imports during high-demand periods*.

- **Infrastructure**
  - Pipeline import capacity: Maximum import capability through cross-border connections (pipelines) - *Reflects infrastructure robustness and supply diversification.*
  - Regasification capacity: LNG terminal capacity to convert LNG into gas - *indicates diversification of routes and flexibility of supply.*
  - Gross inland deliveries in relation to Total import capacity - *measures adequacy of import infrastructure*





Conclusion

The importance of data for Energy Security

Summit on the Future of Energy Security highlighted

Oil and gas security

- Continued focus on oil and gas market monitoring through the IEA.
- Improved data sharing to increase visibility on flows, stocks and refinery operations, particularly in non-IEA member countries.

Energy resilience

- Requiring data reporting on energy sector disruptions, causes, and costs
- Facilitate data and best practice sharing within and between countries

Energy technology supply chains

- Support the IEA's ongoing efforts to enhance systematic market monitoring and outlooks and improve data transparency by identifying and addressing gaps in supply chain data (e.g., trade, production, capacity).

A strong focus on oil security will be critical throughout the clean energy transition

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Commentary — 11 March 2024