



IHS Markit™

Energy Infrastructure and Markets

Database: Midstream Essentials

Comprehensive transportation, processing
and markets infrastructure data for prospect
screening and project development

For stakeholders all along the energy chain from the wellhead through to the end-user, a firm understanding of infrastructure issues has become a key component to success. Midstream Essentials provides the critical information needed to insure that there are no missing links in our clients' operating decisions and business plans.

For the gas and power segment, pipeline, LNG and storage infrastructures are key elements to fuel selection and supply planning decisions. With the development of a merchant LNG market, global gas supply developments now impact regional markets that previously were disconnected.

Thus the pace of LNG project developments in Asia and Australia influences the Atlantic basin gas market outlook, and likewise, US shale gas availability impacts Chinese LNG price negotiations. Gas sector liberalization in many countries has increased the alternatives available and magnified their potential impact on profitability.

To remain competitive and grow companies must look to new markets. Thus a global perspective has become an essential element to business planning.

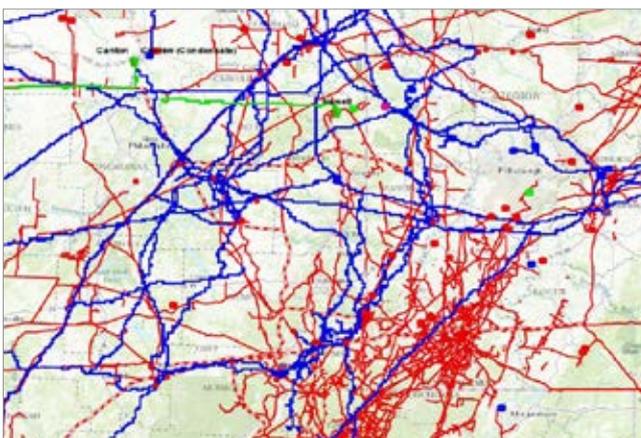
Any meaningful analysis of oil and gas infrastructure issues must be made in tandem with broader upstream developments, including exploration and production (E&P) activity and political risk factors.

As the top provider of E&P data worldwide, IHS Markit offers a comprehensive Energy infrastructure and Markets Database: Midstream Essentials Module that is fully integrated with our upstream data, GIS and analytical products.

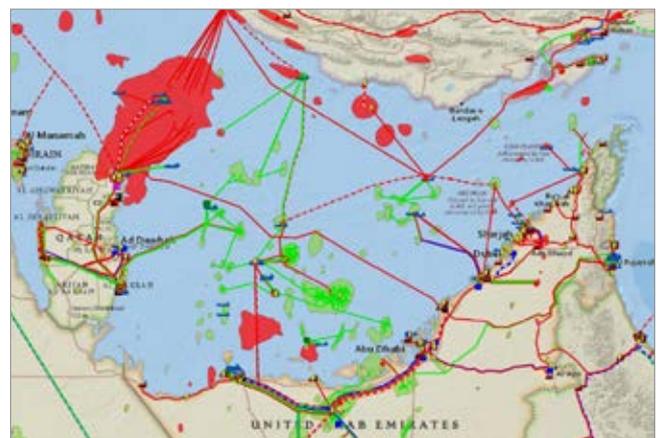
Midstream Essentials provide key information to support:

- New ventures screening
The presence of a pipeline network adjacent to a prospect can be readily identified, mapped and its capacity quantified. The likely ease of access to processing facilities including FPSO's, gas plants, LNG liquefaction and refineries can be assessed. Thus additional investment in infrastructure to monetize production and the potential impact on project economics can be scoped.
- Field development
Once a prospect enters the development phase, potential markets for gas production in the power, petrochemical and industrial sectors can be identified by facility location, size and operating company.

- Gas and power market strategies
The database affords an integrated view of gas supply sources, transport options and power generation facilities by fuel type, not only today, but also the likely evolution considering new projects. LNG and gas pipeline contract details are captured providing key data to identify opportunities for gas marketers. The underground gas storage facility information is key to supply planning to accommodate seasonal demand fluctuations and to capitalize on price arbitrages.
- Competitor Intelligence
IHS Markit's extensive company ownership database enables a client to examine a competitor's position globally as well as in a target market all along the energy chain. The data on projects and their status provide a forward view as well. Likewise, potential partners or clients for infrastructure projects can be identified.



Utica/Marcellus pipeline and storage network



Mideast energy infrastructure

Common attributes for all facility types are plant name, operator, ownership structure, capacity by unit, online date by unit and location coordinates

As well as existing facilities, projects are captured along with their current status and milestones for key events. The content is outlined in the following:

Pipelines:

- Type of pipeline
- Route & length
- Diameter
- Capacity:
 - Time period
 - Reported
 - Estimated
- Looping by segment
- Entry/Exit node capacity & throughput (for Europe)

Compressor & Pumping Stations:

- Type
- Capacity
- Horsepower
- Input and output pressure

Storage Facilities:

- Type of storage
- Storage volume (Gas):
 - Working gas
 - Cushion gas
 - Total
 - Installed compressor power MW
- Total volume (Liquid)

Floating Production Storage & Offloading (FPSO)

- Field name
- Port name
- Construction type (new or converted)
- Mooring Type
- Deadweight tonnage
- Depth
- Length
- Oil production maximum
- Oil storage capacity
- Gas processing capacity
- Gas injection capacity

Gas Processing Plants:

- Gas intake capacity
- Production capacity:
 - Ethane
 - Propane
 - Normal butane
 - Iso-butane
 - Mixed butanes
 - Natural gasoline
 - C5+
 - Condensate
 - LPG
 - NGL
 - Total

LNG Liquefaction & Re-gasification Facilities:

- Capacity holders
- Storage capacity
- Number of tanks
- Technology
- Capital cost

Refineries:

- Capacity by unit (bpd and tons/year)
 - Crude distillation
 - Vacuum distillation
 - Reforming
 - Catalytic cracking
 - Hydrocracking
 - Coking
 - Thermal cracking
 - Visbreaking
 - Hydrotreating
 - Alkylation
 - Isomerization
 - Polymerization
 - MTBE
 - ETBE
 - TAME
 - Lubes
 - Asphalt
 - BTX extraction
 - Hydrogen
 - Sulfur

Biofuels/Synfuels:

- Type
 - Biodiesel
 - Bioethanol
 - CTG
 - GTL
- Intake capacity
- Production capacity:
 - Ethanol
 - Diesel
 - Naphtha
 - LPG
 - Other products
 - Total liquid product
- Gas

Ports:

- Capacity Berths:
 - Berth name
 - Type of service
 - Operating status
 - Depth
 - Length
 - Maximum length overall
 - Maximum draught
 - Maximum dead weight
 - Tonnage

Power Plants:

- Plant type
- Capacity by unit & turbine type
- Primary/alternative fuel by unit

Methanol, Ammonia and Urea Fertilizer:

- Product output capacity
- Plant type
- Plant capacity

Olefin Plants:

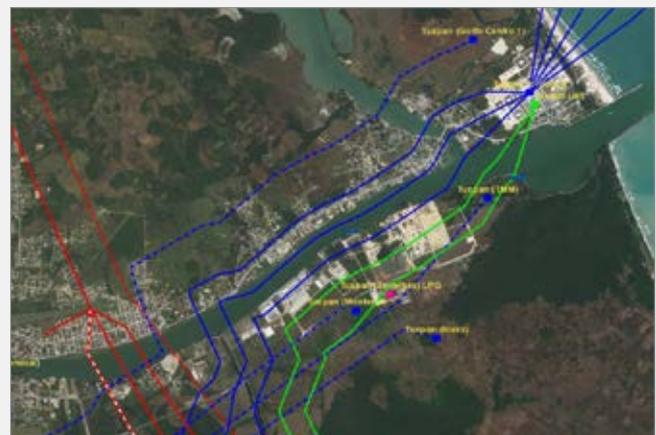
- Ethylene production capacity
- Feedstock usage by type (percentage)

Other Large Industrial Plants:

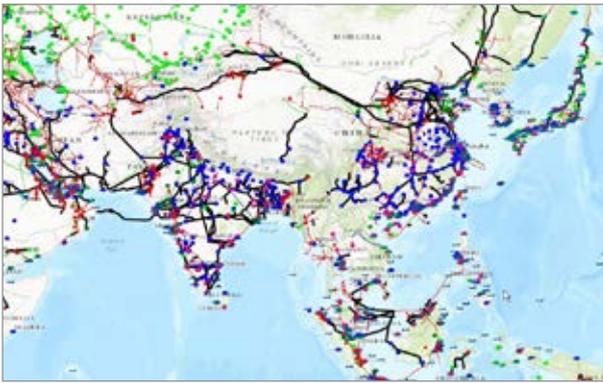
- Industrial type
- Plant production capacity
- Estimated gas consumption at full capacity

Gas Contract & Distribution Structures:

- Gas pipeline and LNG supply contracts
 - Supplier & Buyer
 - Time period
 - Plateau volume
- Gas customer profile
 - Customer type
 - Number
 - Time period
 - Sales volume



Tuxpan terminal expansion plans



New pipeline projects in Asia (highlighted in black)

Modules available in the Energy Infrastructure and Markets Database suite of products include:

E&P Essentials: Integrate reserves and production on field level, including development status for new projects along with details on hydrocarbon characteristics, for your supply planning

Oil Midstream Database: Comprehensive unit processing and production capacity information to 2020

Gas & Power: Comprehensive unit level electric plant and gas storage level information

All infrastructure data is map able and accessible through IHS Markit's GIS products.



Renewable energy based power plant projects (in black)

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About IHS Markit

IHS Markit (Nasdaq: INFO) is a world leader in critical information, analytics and solutions for the major industries and markets that drive economies worldwide. The company delivers next-generation information, analytics and solutions to customers in business, finance and government, improving their operational efficiency and providing deep insights that lead to well-informed, confident decisions. IHS Markit has more than 50,000 key business and government customers, including 85 percent of the Fortune Global 500 and the world's leading financial institutions. Headquartered in London, IHS Markit is committed to sustainable, profitable growth.

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