TOXIC FINANCE

The Banks and Investors Funding the Expansion of Petrochemicals in the US

METHODOLOGY

This report examines how capital flows from banks and investors to the companies building and expanding petrochemical facilities across the US, revealing who is financing the next generation of polluting infrastructure and how much is at stake.

COMPANIES

This report explores the financing for the fifty-three companies behind the forty-two most significant proposed expansions of petrochemical production in the US, as of October 1, 2025. The report focuses on projects that would emit at least 1 million metric tons (MMT) of carbon dioxide equivalent (CO2e) or, if no emissions estimate is available, cost at least $1 billion. In particular, we found 34 projects with estimated emissions of at least 1 MMT CO2e and an additional 8 projects with an estimated cost of at least $1 billion.[1]

SECTOR

We considered any proposed expansion project that turns oil, gas, or coal into a chemical product not primarily used as fuel. This includes ammonia plants, synthetic fertilizer manufacturing, ethylene crackers, propylene plants, methanol plants, and plastic resin manufacturing, among others.

[1] We included any company with an emissions or cost estimate that rounded up to meet the thresholds.

This excludes facilities that rely on alternative feedstocks (such as green hydrogen, green ammonia, or green methanol) or produce synthetic fuels (such as sustainable aviation fuels). This also excludes planned upgrades or maintenance to existing facilities that do not result in an increase in production.

Given our focus on estimated emissions from the increased production, we did not consider proposed expansions in other parts of the petrochemical supply chain that don't directly involve production, such as fracking, pipelines, fractionators, storage hubs, and export terminals.

FINANCIAL TRANSACTIONS

Financial research conducted for this report considers financing from both banks and investors. The research on banks encompasses lending and underwriting, bond and share issuance, project and corporate financing, as well as bilateral and syndicated finance. The research on investors covers the ownership of both stocks and bonds. All dollar amounts are in US dollars (USD).

DATES COVERED

The bank data covers the period from January 2019 to June 2025. The investor data is a snapshot of stock and bond ownership as of September 2025.

SOURCES

Financial data for this report was compiled by Profundo, using information from Dealogic, FactSet, IJGlobal, and a proprietary pension fund portfolio disclosure database, as well as company publications, regulatory filings, and relevant analyst and media reports.

The list of planned petrochemical projects comes from the Environmental Integrity Project's Oil and Gas Watch database. Most emissions estimates come from *Emissions Unleashed*, a report published in September 2024 by the Center for International Environmental Law, or were calculated using the same methodology. Cost estimates come from Environmental Integrity Project's Oil and Gas Watch database, press releases, and news coverage.

ADJUSTERS

Many of the companies in our analysis operate across multiple sectors and in different parts of the world. To account for this, we used sector and geographic adjusters to create three different views of the data:

- **Total:** Total financing displays all bank financing or investment in the companies leading the expansion of petrochemical production in the US.
- **Petrochemicals:** Petrochemicals displays the share of total financing or investment attributed to petrochemicals globally.
- **US Petrochemicals:** US Petrochemicals displays the share of total financing or investment attributed to petrochemicals in the US.

Profundo calculated the sector and geographic adjusters based on, in order of preference, capital expenditure, assets, revenues, or profit/loss.

Here's an example of how it works. Bank A gives Company B a loan for $100. Company B spends $60 on pipelines and $40 on petrochemicals, of which $20 goes to the expansion of petrochemicals in the US. Based on the proportion of capital expenditure, total financing from Bank A to Company B is $100, petrochemical financing is $40, and US petrochemical financing is $20.

LIMITATIONS

There are many limitations to this research. First, it is a snapshot in time. The status of projects is constantly changing, with companies regularly proposing new projects and cancelling previous ones. Additionally, stocks and bonds can be bought and sold from one moment to the next.

Second, there are limitations to the data. In particular, there is limited information on bilateral loans and bond ownership, which many banks and investors do not report publicly. Financial transaction databases may include incomplete information.

Finally, this report only looks at a subset of the expansion of the petrochemical industry in the US. We were unable to consider facilities without either an emissions estimate or a cost estimate at the time of the investigation. As mentioned, this report also excludes fracking, pipelines, fractionators, storage hubs, export terminals, or other parts of the petrochemical supply chain that don't involve production.

As a result, this analysis leaves out many petrochemical companies actively expanding in the US and underestimates the total financing allocated to the sector.

PROFUNDO

Profundo is a non-profit research firm based in the Netherlands that specializes in financial, supply chain, and market analysis. Profundo conducted the financial research for this report, including compiling financial transactions, estimating deal attribution, and calculating sector and geographic adjusters.

Please refer to Profundo's methodology note below for more details.

Methodology note

Toxic Finance financial research

Léa Pham Van

25 September 2025

Introduction

This Methodology note outlines the types of finance covered in the study, the calculated components of the financial research, and the data sources used. This research included three categories of calculated elements:

1. financial institution financing contributions,
2. segment adjusters, and
3. geographical adjusters.

This Methodology note is organised as follows: Section 1 gives an overview of the companies selected for the research; Section 2 describes the types of finance included in the study; Section 3 presents the data sources used to conduct the study; Section 4 provides the time scope applied to the study; Section 5 details the methodology used to calculate the financing contributions where these were not provided; Section 6 provides details on how the segment activities of companies were analysed to adjust the financing contributions to estimate the value of financing directed towards one or several specific sectors; and Section **Error! Reference source not found.** explains how the geographic spread of companies operating in multiple relevant geographies is accounted for.

1 Company selection

The research included two groups of companies. In the first group, companies were selected for their role as sponsors, or as parent companies of sponsors, of petrochemical facilities in the United States. Table 1 lists the 64 selected petrochemical facilities. The second group comprised companies involved in chemical production, chemical recycling, or pipeline operations. Table 2 lists all companies included in the study, along with the rationale for their selection.

Table 1 Petrochemical facilities

Petrochemical facility	Note
Air Products Darrow Blue Energy Facility	-
American Plant Food Ammonium Sulfate Production Facility	-
ARCH2 TransGas Adams Fork Ammonia Plant	-
BASF Geismar Chemical Complex	-
Blue Bayou Ammonia Plant	-
CF Industries/Lotte Gulf Coast Blue Ammonia Plant	-
CF Industries/Mitsui Gulf Coast Blue Ammonia Plant (aka Blue Point Complex)	-

Petrochemical facility	Note
CF Industries Gulf Coast Blue Ammonia Plant	POSCO exited the Blue Ammonia project in April 2025
Chemours Fayetteville Works Plant	-
Chemours Washington Works Plant	-
Chevron Phillips Chemical Orange Polyethylene Plant	-
Chevron Phillips Chemical Port Arthur Plant	-
Chevron Phillips Chemical Sweeny Old Ocean Facilities	-
Clean Hydrogen Works - Ascension Clean Energy Facility	-
Cook Inlet Blue Hydrogen and Ammonia Hub	-
Corpus Christi Polymer & Desalination Plant	-
Covestro Industrial Park - Baytown Plant	-
Cronus Ammonia Plant	-
Dow Texas Operations Freeport	-
Enbridge Ingleside Blue Ammonia Plant (Project YaREN)	-
Energy Transfer Nederland Ethylene Cracker	-
Enterprise Beaumont Marine East Facility	-
Enterprise Beaumont Marine West Complex	-
Enterprise Mont Belvieu Complex	-
Equistar Chemicals Corpus Christi Complex	-
Equistar/LyondellBasell Channelview Complex	-
Exxon Coastal Plain Project	-
ExxonMobil Chemical Baytown Olefins Plant	-
Formosa Baton Rouge Plastics Plant	-
Formosa Point Comfort Plant	-
Formosa Sunshine Project	-
Golden Triangle Polymers Plant	-
Grand Forks Fertilizer Plant	-
Grannus Alaska Blue Ammonia Plant & Offshore Terminal	-
Grannus Blue Ammonia and Hydrogen Project	-
Gulf Coast Hydrogen Plant	-
Hanwha/Ineos Low Carbon Ammonia Facility	-
Heartland Hub: Morris Fertilizer Plant	-

Petrochemical facility	Note
Houston Ship Channel Low-Carbon Ammonia Plant	-
Indorama Ventures - Westlake Ethylene Plant	-
JERA/Uniper/ConocoPhillips Gulf Coast Ammonia Plant	-
LACC/Lotte Chemical Ethylene & MEG Plants	-
Lake Charles Blue Ammonia Plant	-
Lake Charles Methanol Plant	-
Linde Nederland Facility	-
Motiva Polyethylene Manufacturing Complex	-
Nutrien Kenai Nitrogen Operations	-
OxyChem Battleground Plant	-
Port of Corpus Christi Blue and Green Ammonia Facility	-
Posey County Midwest Fertilizer Plant	-
PTTGCA Petrochemical Complex	-
Roehm America Bay City MMA Plant	-
Sabic Americas Petrochemical Facility	-
Shell Geismar Chemical Plant	-
Shintech Plaquemine Plant	-
St. Rose Blue Ammonia Facility	-
Ten08 Clean Ammonia Plant	-
Westlake Calvert City Ethylene Plant	-
Westlake Calvert City PVC Plant	-
Westlake Calvert City Vinyls Plant	-
Westlake Lake Charles South Plant	-
Westlake Vinyls VCM-E Facility	-
Woodside Beaumont Clean Ammonia Complex (formerly OCI Beaumont Clean Ammonia Complex)	-
Yara/BASF Gulf Coast Blue Ammonia Plant	BASF and Yara ended joint project for low-carbon ammonia at U.S. Gulf Coast in August 2025

Source: Profundo

Table 2 Company list

Group	List
Alterra	Chemical Recycling
Freepoint	Chemical Recycling
Nexus Circular	Chemical Recycling
LG Chem	Global top 15 chemical firm
Petrochina	Global top 15 chemical firm
Rongsheng	Global top 15 chemical firm
Sinopec	Global top 15 chemical firm
Syngenta	Global top 15 chemical firm
Moss Lake Partners (DeLa Express LLC)	Pipeline
Air Liquide	PetChem facilities & owners
Air Products	PetChem facilities & owners
Alaska Gasline Development Corp	PetChem facilities & owners
Alpek	PetChem facilities & owners
American Plant Food	PetChem facilities & owners
BASF	PetChem facilities & owners
Blue Bayou Ammonia	PetChem facilities & owners
CF Industries Holdings	PetChem facilities & owners
Chemours	PetChem facilities & owners
Chevron	PetChem facilities & owners
Chevron Phillips Chemical Company	PetChem facilities & owners
Clean Hydrogen Works (CHW)	PetChem facilities & owners
ConocoPhillips	PetChem facilities & owners
Corpus Christi Polymers	PetChem facilities & owners
Covestro	PetChem facilities & owners
Cronus Chemicals	PetChem facilities & owners
Dow	PetChem facilities & owners + Global top 15 chemical firm
Enbridge	PetChem facilities & owners
Energy Transfer	PetChem facilities & owners
Enterprise Products Partners	PetChem facilities & owners
Exolum	PetChem facilities & owners
ExxonMobil	PetChem facilities & owners

Group	List
Far Eastern New Century	PetChem facilities & owners
Formosa Plastics Corp	PetChem facilities & owners
Golden Triangle Polymers Company	PetChem facilities & owners
Grannus	PetChem facilities & owners
Hafnia	PetChem facilities & owners
Hanwha Corp	PetChem facilities & owners
Hilcorp Energy	PetChem facilities & owners
Idemitsu Kosan	PetChem facilities & owners
Indorama Ventures	PetChem facilities & owners
INEOS	PetChem facilities & owners
INPEX	PetChem facilities & owners
JERA	PetChem facilities & owners
Lake Charles Methanol II, LLC (LCM)	PetChem facilities & owners
Linde	PetChem facilities & owners
Lotte Holdings	PetChem facilities & owners
LSB Industries	PetChem facilities & owners
LyondellBasell Industries	PetChem facilities & owners
Midwest Fertilizer Company	PetChem facilities & owners
Mitsubishi Corporation	PetChem facilities & owners
Mitsui	PetChem facilities & owners
Mitsui OSK Lines (MOL)	PetChem facilities & owners
Northern Plains Nitrogen	PetChem facilities & owners
Nutrien	PetChem facilities & owners
Occidental Petroleum (Oxy)	PetChem facilities & owners
Proman	PetChem facilities & owners
PTT PCL	PetChem facilities & owners
QatarEnergy	PetChem facilities & owners
Roehm	PetChem facilities & owners
Royal Vopak	PetChem facilities & owners
RWE	PetChem facilities & owners
SaskEnergy	PetChem facilities & owners
Saudi Arabian Oil Co	PetChem facilities & owners

Group	List
Shell	PetChem facilities & owners
Shintech	PetChem facilities & owners
St. Charles Clean Fuels	PetChem facilities & owners
Sustainable Fuels Group	PetChem facilities & owners
Ten08 Energy	PetChem facilities & owners
Toyo Engineering Corp	PetChem facilities & owners
Uniper	PetChem facilities & owners
Vopak Moda Houston	PetChem facilities & owners
Westlake Corporation	PetChem facilities & owners
Woodside Energy	PetChem facilities & owners
Xcel Energy	PetChem facilities & owners
Yara	PetChem facilities & owners

Source: Profundo

2 Types of finance

This section describes the types of finance included in the research. Financial institutions can invest in companies through a number of modalities. They can provide credit to a company, including loans and the underwriting of share and bond issuances. They can also invest in a company's equity and debt by holding shares and bonds. This section outlines the different types of financing, how they were researched, and the implications for the study.

2.1 Corporate loans

The most common form of debt financing is borrowing from commercial banks. In most cases, money is borrowed from commercial banks. Loans can be either short-term or long-term in nature.

- Short-term loans (including trade credits, current accounts, leasing agreements, et cetera) have a maturity of less than a year. They are mostly used as working capital for day-to-day operations. Short-term debts are often provided by a single commercial bank, which does not ask for substantial guarantees from the company.
- A long-term loan has a maturity of at least one year, but generally of three to ten years. Long-term corporate loans are particularly useful to finance expansion plans, which only generate rewards after some period of time. The proceeds of corporate loans can be used for all activities of the company. Often, long-term loans are extended by a loan syndicate, which is a group of banks brought together by one or more arranging banks. The loan syndicate will only undersign the loan agreement if the company can provide certain guarantees that interest and repayments on the loan will be fulfilled.

There are multiple reasons to acquire a loan, the two most common and broad categories are:

- **Project finance**

  One specific form of corporate loan is project finance. This is a loan that is earmarked for a specific project.

- **General corporate purposes / working capital**

  Often a company will receive a loan for general corporate purposes or for working capital. On occasion while the use of proceeds is reported as general corporate purposes, it is in fact earmarked for a certain project. This is difficult to ascertain.

2.2 Share issuances

Issuing shares on the stock exchange gives a company the opportunity to increase its equity by attracting a large number of new shareholders or increase the equity from its existing shareholders.

When a company offers its shares on the stock exchange for the first time, this is called an Initial Public Offering (IPO). When a company's shares are already traded on the stock exchange, this is called a secondary offering of additional shares.

To arrange an IPO or a secondary offering, a company needs the assistance of one or more (investment) banks, which will promote the shares and find shareholders. Therefore, the role of investment banks in this process is very important.

The role of the investment bank is temporary. The investment bank purchases the shares initially and then promotes the shares and finds shareholders. When all issued shares that the financial institution has underwritten are sold, they are no longer included in the balance sheet or the portfolio of the financial institution. However, the assistance provided by financial institutions to companies in share issuances is crucial. They provide the company with access to capital markets and provide a guarantee that shares will be bought at a pre-determined minimum price.

2.3 Bond issuances

Issuing bonds can best be described as cutting a large loan into small pieces and selling each piece separately. Bonds are issued on a large scale by governments, but also by corporations. Like shares, bonds are traded on the stock exchange. To issue bonds, a company needs the assistance of one or more (investment) banks, which underwrite a certain amount of the bonds. Underwriting is in effect buying with the intention of selling to investors. Still, in case the investment bank fails to sell all bonds it has underwritten, it will end up owning the bonds.

2.4 (Managing) shareholdings

Banks can, through the funds they are managing, buy shares of a certain company making them part-owners of the company. This gives the bank a direct influence on the company's strategy. The magnitude of this influence depends on the size of the shareholding.

As financial institutions actively decide in which sectors and companies to invest, and are able to influence the company's business strategy, this research will investigate the shareholdings of financial institutions of the selected companies. Shareholdings are only relevant for stock-listed companies. Not all companies in the study are listed on a stock exchange. The company selection has tried to take this into account by including the major companies in the relevant sectors. However, some ownership forms may dominate in certain sectors under analysis. Additionally, some ownership forms are more prominent in some countries.

Shareholdings have a number of peculiarities that have implications for the research strategy. Firstly, shares can be bought and sold on the stock exchange from one moment to the next. Financial databases keep track of shareholdings through snapshots, or filings. This means that when a particular shareholding is recorded in the financial database, the actual holding, or a portion of it, might have been sold, or more shares purchased. Secondly, share prices vary from one moment to the next.

2.5 (Managing) investments in bonds

Banks can also buy bonds of a certain company. The main difference between owning shares and bonds is that owner of a bond is not a co-owner of the issuing company; the owner is a creditor of the company. The buyer of each bond is entitled to repayment after a certain number of years, and to a certain interest during each of these years.

3 Data sources

During the financial data collection process, this research utilised financial databases (FactSet, Dealogic, Pitchbook), project finance database IJGlobal, company reports (annual, interim, quarterly) and other company publications, company register filings, as well as media and analyst reports.

4 Research period

Corporate loans, credit and underwriting facilities provided to the selected companies were researched for the period January 2019 – June 2025. Investments in bonds and shares of the selected companies were identified through FactSet and Profundo Pension Fund Portfolio at the most recently available filing date in September 2025.

5 Financial institution financing contributions

Financial databases often record loans and issuance underwriting when these are provided by a syndicate of financial institutions. Company reports and publications, company register filings, and the media will also provide information on loans provided bilaterally, i.e. between one bank and the company in question. The level of detail per deal often varies. Some sources may omit the maturity date or term of the loan, the use of proceeds, or even the exact issue date. Financial databases often do not report on the proportions of a given deal that can be attributed to the participants in deal. In such instances, this research calculated an estimated contribution based on the rules of thumb described below.

5.1 Loans and underwriting services

Individual bank contributions to syndicated loans and underwriting (bond & share issuance underwriting) were recorded to the largest extent possible where these details were included in financial database, or company or media publications.

In many cases, the total value of a loan or issuance is known, as well as the number of banks that participate in this loan or issuance. However, often the amount that each individual bank commits to the loan or issuance has to be estimated.

Profundo has developed a methodology based on a beta regression model to estimate the financial institutions' contributions based on the available information. Specifically, when the fees charged by each financial institution are available, this research estimates each financial institution's contribution as a proportion of the total fees received by all financial institutions. Then, the estimated proportion (for instance, if Bank A received 10% of all fees) is applied to the total deal value (assuming a deal of US$10 million, Bank A would be assigned a contribution of US$1 million or the 10% of US$10 million).

When the deal's fee data is missing or incomplete, this research used the bookratio approach. The bookratio determines the deal's distribution between the different financial institutions involved as lenders, depending on their roles.

The beta regression model considers the following variables:

- The number of total participants

- The ratio between bookrunners and other participants

$$Book\ ratio := \frac{number\ of\ bookrunners}{number\ of\ participant}.$$

- The role of the financial institution (bookrunner or not)
- The type of financing: Corporate loan, Revolving credit facility, bond issuance and share issuance.

Given the above variables, the bookratio methodology fits a beta regression model of the form:

$$Proportion\ per\ financial\ institution = g^{-1}(x_i^{\intercal}\beta),$$

where g^{-1} is the inverse of the Logit function, x_i is each of the variables considered and β are the parameters to estimate.

5.2 Shareholding

The number and values of shares held by financial institutions, corporates, governments and individuals are reported in financial databases, they were not subject to adjustment.

5.3 Bondholding

The number and values of bonds held by financial institutions are reported in financial databases, they were not subject to adjustment.

6 Segment adjusters

This section explains the methodology by which segment adjusters for the sectors in focus were calculated and applied.

Segment adjusters are an estimated percentage of a company's operations in a specific activity (here: petrochemicals), in order to estimate how much financing is directed towards this activity.

6.1 Sources

Segment adjusters were developed using the segment reporting in annual reports to the fullest extent possible, complemented by further information from company publications and websites and estimations where necessary.

6.2 Calculation

Several of the selected companies listed in Table 2 are global and vertically integrated companies. As they operate globally and/or in different levels of the supply chain, segment and geographical adjusters were calculated to reflect the value of financing attributable to:

- Segment: Petrochemistry,
- Segment & Geography: Petrochemistry in the United States.

Adjusters were developed using the segment reporting in annual reports as much as possible, complemented by further information from company publications and websites and estimations where necessary.

The following financial indicators were used in order of preference:

- segment capital expenditures/additions to non-current assets,
- segment assets,
- segment revenues,
- segment profit/loss.

Segment adjusters were developed for all companies identified in the financial research. Where financing was identified at the group level, adjusters were calculated using the group publication. The adjusters represent the estimated proportion of activity related to petrochemicals or petrochemicals in the United States as a whole, not only the proportion of activity related to the specific petrochemical facilities.

When financing was identified at the subsidiary level, as much as possible, this research identified the segment activities using the subsidiary's publications. Where financing was identified for a financing vehicle, the group-level adjuster was applied.

Adjusters were calculated for the last year available and applied to all identified financing for that company. Adjusters were calculated for companies for which financing has been identified.

6.3 Example

This sub-section illustrates how a segment adjuster is developed for a company and applied to identified financing.

In July 2012, Rimbunan Hijau Group subsidiary Jaya Tiasa Holdings issued shares worth US$104 million which were underwritten by CIMB Group and RHB Banking. CIMB underwrote US$78 million, while RHB Banking underwrote US$26 million.

Jaya Tiasa has four reportable operating segments: Logs Trading; Manufacturing; Oil Palm, and; Others. The timber adjusters is based on Logs Trading and Manufacturing segments, as the latter is purely focused on wood products. The palm oil adjuster is based on the Oil Palm segment. Details for the segment additions to non-current assets / capital expenditures were available and thus used. Using these segment definitions and figures, 77% of Jaya Tiasa's capital expenditures were in palm oil in 2012, while 23% were in timber.

Therefore, US$80 million of the US$104 share issuance was attributed to palm oil, with the remaining US$24 million attributed to timber. At the individual financial institution level, US$60 million of CIMB's US$78 million contribution was attributed to palm oil, while US$18 million was attributed to timber. For RHB Banking US$20 million was attributed to palm oil, while US$6 million was attributed to timber.

6.4 Data limitations

The financial research is subject to a number of limitations:

- **Loans**

  Information from the financial databases used primarily includes syndicated lending, i.e. two or more financial institutions providing a loan to one company together. Usually, the financial databases do not have data on bilateral lending, i.e. direct loans between one bank and one company.

  Bilateral lending was researched using company reports, company registries, and media archives, among others. However, these sources still have data gaps. Many companies do not disclose their bankers, or not in sufficient detail to include in the analysis. This is the result of different requirements in different jurisdictions, and whether or not the company is listed on the stock exchange.

- **Bond & shareholdings**

The financial databases collect data on bond and shareholdings from fund filings, company reports and stock exchanges. As a result, share and bond holdings data coverage is generally better for asset managers and the asset management arms of insurance companies and banking groups.

Other financial institutions that do not offer asset management activities, such as pension funds and insurance companies, are not required to publish their investment portfolios. Those who publish their portfolios are not always covered by the financial databases. Profundo maintains a database of pension fund portfolio disclosures. These are updated at least once a year.

For all bond and shareholdings, actual positions are constantly changing. Bond and shareholders identified during the course of this research may have sold their position, or in other ways changed the composition of their portfolio.