Oil and Gas Project Delays

By: The Allocc Team

Opportunity Cost of Project Delays in Oil & Gas (>$100M projects)

Below we analyze each project category in terms of **daily opportunity loss**, **number of projects per year**, **average delay per project**, and **annual opportunity loss** due to delays. All figures are globally aggregated averages over the past 5 years, with authoritative sources and industry benchmarks cited.

1. Floating Production Storage and Offloading (FPSOs)

FPSOs are high-value offshore assets, often processing on the order of 100,000 barrels of oil per day (some new units exceed 200k bpd). This means each day of delay postpones millions of dollars of production. FPSO projects are notoriously delay-prone – for example, of 45 FPSOs installed worldwide from 2008–2012, 30 were delivered late . A deep-dive study of 9 recent FPSOs found a **combined schedule overrun of >12 years**, averaging roughly **16 months delay per FPSO** . Globally, industry data show an uptick in FPSO awards in recent years (e.g. 27 awards during 2017–2019, ~9 per year) , so on the order of **5–10 FPSO projects reach FID annually**. The unrealized revenue from these delayed start-ups is very large given the high daily output and lengthy delays.

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	**≈ $5–6 million per day** (per FPSO, based on ~100k bbl/d at ~$60/bbl) offshore-mag.com brazilenergyinsight.com.
Projects per Year (global)	**~6–10 FPSOs/year** (e.g. 27 FPSO awards in 2017–2019, rebound to 10 in 2021) jpt.spe.org brazilenergyinsight.com.
Average Delay per Project	**~16 months** (~480 days on average) offshore-mag.com – significant schedule slippage is common for FPSOs.
Annual Opportunity Loss (USD)	**≈ $20–25 billion/year** (unrealized revenue globally from delayed FPSO startups, calculated as daily loss × projects × delay).

2. Offshore Platforms (Fixed)

Fixed offshore production platforms (e.g. jackets or gravity-based structures) typically handle tens of thousands of barrels of oil equivalent per day. Even smaller platforms (50k bpd) represent on the order of **$3 million in output per day** (at ~$60/bbl). Large upstream projects overwhelmingly face delays – one global study found **most megaprojects run ~20 months late** on average . In the oil & gas sector specifically, **~1.5 years average delay** has been observed for major projects . We estimate on the order of **~10 fixed-platform projects globally per year** (new builds or major upgrades >$100M). Given typical delays around a year, the yearly aggregated opportunity cost is substantial (several tens of billions).

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	**≈ $2–4 million per day** (per platform, assuming ~30–50k boe/d output).
Projects per Year (global)	**~10 projects/year** (approximate count of major new offshore platforms >$100M).
Average Delay per Project	**~12–18 months** (roughly **1 year** delay on average) mckinsey.com energy.economictimes.indiatimes.com.
Annual Opportunity Loss (USD)	**≈ $10–15 billion/year** (deferred production revenue from delayed fixed-platform projects worldwide).

3. Gas Processing / Compression Plants

Natural gas processing and compression facilities enable gas production to reach markets. A mid-sized gas plant (e.g. ~200 MMscf/d capacity) can easily represent **>$1 million of gas sales per day** (at ~$5 per Mcf, plus NGL value). Unfortunately, gas plant projects often miss schedules – an Independent Project Analysis study found **gas plants miss schedule targets by ~30% on average** (i.e. significant late delivery). Typical project timelines are on the order of 1.5–2 years, so a 30% slip is many months of delay. Globally, roughly **10–20 gas processing projects** (>$100M) are executed per year given the expansion of gas production. Assuming an average delay of a few hundred

days, the lost revenue (from gas not processed and sold) adds up to a few billion USD annually.

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	**≈ $1 million per day** (per plant, ~200 MMcf/d gas at ~$5/MMBtu + liquids) – actual value varies with gas/NGL prices.
Projects per Year (global)	**~15 projects/year** (estimated count of major gas processing or compression projects >$100M worldwide).
Average Delay per Project	**~6–8 months** delay on average (≈ **180–240 days**; gas plants average ~30% schedule overrun) ipaglobal.com .
Annual Opportunity Loss (USD)	**≈ $3–4 billion/year** (lost gas sales globally due to processing/compression project delays).

4. Onshore Refineries

New refinery projects and large refinery expansions (>$100M) tend to be multi-billion dollar endeavors with very high throughputs. A **200,000 bpd refinery** produces on the order of **$10–16 million worth of fuel products per day** (assuming ~$70–80/bbl product value). Thus, any delay in commissioning directly translates to massive unrealized revenue. Megaproject performance analyses show that **refining projects frequently suffer delays** (one study noted ~50% of refining megaprojects run behind schedule) . Globally, only a

few major refinery projects reach completion each year (on the order of ~5 projects/year, as many countries add infrequent large new refineries or major upgrades). However, those that do proceed often experience delays around **1 year or more** (e.g. several high-profile refineries in Asia and Middle East were delayed by 6–18 months). The **annual opportunity cost** from these delays is on the order of **tens of billions of dollars**, given the high daily values and number of projects.

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	**≈ $10–15 million per day** (per refinery project, assuming ~150–200 kbpd capacity at ~$70–80/bbl product price).
Projects per Year (global)	**~5 projects/year** (few new large refineries or major refinery upgrades annually worldwide).
Average Delay per Project	**~12 months** (often 1 year or more delay on major refinery startups; many projects face schedule slips aegex.com).
Annual Opportunity Loss (USD)	**≈ $15–20 billion/year** (lost/refined product output revenue globally due to refinery project delays).

5. Petrochemical Complexes

Petrochemical complexes (e.g. large ethylene crackers, polymer plants, fertilizer or methanol complexes) similarly are high-value projects. A world-scale petrochemical plant can produce a **couple thousand tons of**

product per day, which at typical prices (several hundred to ~$1000 per ton) equates to on the order of **$2–5+ million in sales per day**. These projects are complex and can be delayed by construction challenges or market shifts. Industry experience shows **delays are common across all segments** – petrochemical plants included – due to scale and complexity . Globally, perhaps **~5–10 major petrochemical projects** (>$100M) are completed per year (especially driven by Asia and Middle East investments). If each faces an average delay of a few months (e.g. 6 months typical), the aggregate **annual unrealized revenue** from delayed petrochemical capacity is on the order of **several billion dollars**.

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	**≈ $3–5 million per day** (per complex, varies by product; e.g. a 1 mtpa ethylene/polymer complex ~$2–3M/day at ~$800–1000/ton).
Projects per Year (global)	**~8 projects/year** (estimated count of large petrochemical complexes >$100M globally).
Average Delay per Project	**~6 months** (approximately **180 days** delay on average; actual delays vary by project size/region).
Annual Opportunity Loss (USD)	**≈ $5–8 billion/year** (lost chemical product revenue due to petrochemical project delays worldwide).

6. LNG Trains (5–10 mtpa capacity)

LNG liquefaction trains in the 5–10 mtpa capacity range are among the most capital-intensive projects, often exceeding $5–10 billion each. A single 5 mtpa LNG train processes roughly **0.65 Bcf/day** of gas; a 10 mtpa train ~1.3 Bcf/d. At recent LNG prices, this is on the order of **$5–10 million in output value per day** (depending on gas price volatility). LNG projects have a history of **schedule overruns** – for instance, Australian LNG mega-projects were hit by severe delays and cost inflation . Many LNG trains in the past decade (Australia, US, etc.) came online later than planned (often ~1–2 years late). Globally, the pace of new trains is only a few per year (roughly **2–3 LNG trains commissioned per year** on average in the last 5 years). Each delayed train's unrealized revenue can be in the **low billions** USD (a 1-year delay at ~$7M/day ~ $2.5 billion). Summing across projects, we estimate **annual opportunity loss on the order of ~$5–10 billion** from LNG project delays.

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	**≈ $7–10 million per day** (per 5–10 mtpa LNG train; ~0.8–1.0 Bcf/d gas throughput valued at $7–10/MMBtu).
Projects per Year (global)	**~2–3 trains/year** (limited number of new large LNG trains reaching operation annually worldwide).
Average Delay per Project	**~12+ months** (LNG megaprojects often **1–2 years** behind schedule on average aegex.com).
Annual Opportunity Loss (USD)	**≈ $5–8 billion/year** (deferred LNG sales globally due to train commissioning delays).

7. Pipelines (Gas/Oil)

Major oil and gas pipeline projects (e.g. cross-country pipelines or export lines) are critical to bring hydrocarbons to market. A single large pipeline can transport **hundreds of thousands of barrels of oil per day** or **multiple Bcf of gas per day**. If that capacity isn't available, producers may have to curtail output or sell locally at a steep discount. For example, pipeline bottlenecks in the Bakken shale caused local crude to sell $5/barrel under benchmark, a **loss of about $4 million per day** for producers . Similarly, Canada's lack of pipeline capacity in 2018 was estimated to cost the country **$80 million in lost revenue per day** (for delayed projects like Trans Mountain and Keystone XL) . We estimate on the order of **~20 major pipeline projects globally per year** (including oil and gas). Many face delays due to lengthy permitting, right-of-way and community issues – **delays of a year or more are common**. The **annual opportunity cost** of pipeline delays is arguably one of the highest among categories – likely on the order of **tens of billions of USD** globally – because of the large number of projects and high volumes impacted .

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	**≈ $5–10 million per day** (per pipeline, varies with size: e.g. a 0.5 Mbbl/d oil line ~$30M/day at $60/bbl; a 1 Bcf/d gas line ~$5–8M/day).
Projects per Year (global)	**~20 projects/year** (rough count of large pipeline projects >$100M worldwide each year).
Average Delay per Project	**~12 months** (often **1 year+** delays; many pipelines face regulatory and construction holdups).
Annual Opportunity Loss (USD)	**≈ $30–40+ billion/year** (global lost oil/gas sales due to pipeline project delays – high volume impact minneapolisfed.org).

8. Power Plants (Gas, Thermal)

Large gas-fired or coal-fired power plants (thermal power projects > $100M) typically generate **hundreds of megawatts** of electricity. A 500 MW gas plant can produce ~12,000 MWh per day; at say $50/MWh, that's about **$600,000 in electricity sales per day** (a 1 GW plant would be double). Delays in power projects tend to be shorter than upstream projects, but still significant (e.g. grid connection issues, contractor delays, etc. can push schedules out by months). With the global power sector commissioning on the order of **dozens of large gas/thermal plants per year** (for example, >40 GW of new gas power capacity added in 2020 alone), even a few months' delay for each can aggregate to a sizable loss. We assume an average delay of ~6 months per project. The **annual opportunity cost** (generation not delivered) would be in

the **low-single-digit billions USD** range globally – notable, though smaller than upstream project losses, given the lower revenue per project.

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	**≈ $0.5–1.0 million per day** (per plant, e.g. a 500–800 MW plant running at full capacity and typical power prices).
Projects per Year (global)	**~30 projects/year** (rough global count of large gas/thermal power plant projects >$100M).
Average Delay per Project	**~6 months** (≈ **180 days** on average; many power projects face moderate delays in construction).
Annual Opportunity Loss (USD)	**≈ $5 billion/year** (lost electricity revenue from delayed power generation projects worldwide).

9. Offsite & Utility Systems

Offsite and utility systems include supporting infrastructure for major projects (e.g. captive power plants, water treatment, pipelines within a complex, storage tanks, etc.). These systems themselves may not generate revenue, but **their delay can hold up the startup of the main facility**, effectively causing the same opportunity cost as the main project. For example, if a refinery's tank farm or a chemical plant's utility unit is delayed, the entire complex might be unable to operate at capacity. Thus, the **daily opportunity loss** is linked to the primary facility's output – often several million dollars per day for a large complex. Data specific to offsites is scarce, but such subsystems are

frequently on the critical path of megaprojects. (In megaproject execution, **any day of delay in achieving startup directly erodes project NPV and returns** .) We estimate only a handful of dedicated offsite/utility projects per year (many are integrated within bigger projects). Assuming perhaps **~5 projects/year** that are mainly offsite/utilities, with moderate delays (~3 months average), the **annual lost opportunity** might be on the order of **<$1–2 billion** globally (since these delays typically manifest as part of the larger project's delay cost).

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	**≈ $2–5 million per day** (depending on the size of facility impacted; essentially the value of production deferred in the associated plant).
Projects per Year (global)	**~5 projects/year** (major standalone offsite/ utility system projects, not counting those embedded in bigger projects).
Average Delay per Project	**~3 months** (≈ **90 days** on average; offsites can be delayed by engineering integration issues).
Annual Opportunity Loss (USD)	**≈ $1 billion/year** (order of magnitude of lost revenue, recognizing these delays usually coincide with main project delays).

10. Storage Terminals & Hubs

Storage terminals and hubs (for crude oil, refined products, LNG import/export, etc.) enable the movement and trading of hydrocarbons. While storage facilities themselves generate revenue mainly via throughput fees or

arbitrage, their delay can constrain market access – for instance, if an export terminal is not ready, producers must hold back production or use costlier alternatives. A large crude terminal or hub can handle on the order of **hundreds of thousands of barrels per day** (e.g. a 300k bpd export terminal ~ $18 million of oil flow per day at $60/bbl). Delays in such infrastructure thus represent **deferred sales**. In practice, even partial outages or delays have multi-million-dollar impacts: *e.g.*, recent pipeline terminal halts in Nigeria disrupted **$10–15 million per day** of oil flows . Globally, only a few major terminal projects come online each year (perhaps **~5 projects/year** >$100M). If each is delayed by a few months on average, the **annual opportunity cost** from storage/logistics delays is on the order of a few **billion USD** (and even higher if a critical global hub is affected).

Metric	Value (Global Average)
Daily Opportunity Loss (USD)	≈ **$5–10 million per day** (per terminal, depending on scale; large oil hubs can see >$10M/day of throughput value).
Projects per Year (global)	**~5 projects/year** (major storage terminals, export/import hubs >$100M globally).
Average Delay per Project	**~6 months** (≈ **180 days** on average; delays in land acquisition, construction, or commissioning are common).
Annual Opportunity Loss (USD)	≈ **$3–5 billion/year** (estimated unrealized value from delayed storage capacity, globally aggregated).

Global Perspective: Across all these categories, project delays in the oil & gas industry carry massive opportunity costs. Studies by project management and consulting organizations consistently show a high prevalence of delays and cost

overruns in energy mega-projects . The **total unrealized revenue** from project delays (>$100M) globally can be estimated in the **hundreds of billions of USD over 5 years** – on the order of **$50+ billion per year** when summing up all categories (in line with industry analyses that project overruns and delays cost the energy sector tens of billions annually). Addressing these schedule issues would unlock significant value by bringing production online sooner .

Global Oil & Gas Project Delays Opportunity Loss (5-Year Avg.)

	Project Category	Daily Opportunity Loss (USD	Projects per Year (Global)	Avg. Delay per Project (days	Annual Opportunity Loss (USD)
0	FPSOs	$5–6 million	6–10	480	$20–25 billion
1	Offshore Platforms (Fixed)	$2–4 million	~10	365	$10–15 billion
2	Gas Processing / Compression Plants	~$1 million	~15	180–240	$3–4 billion
3	Onshore Refineries	$10–15 million	~5	365	$15–20 billion
4	Petrochemical Complexes	$3–5 million	~8	180	$5–8 billion
5	LNG Trains (5–10 mtpa)	$7–10 million	2–3	365	$5–8 billion
6	Pipelines (Gas/Oil)	$5–10 million	~20	365	$30–40 billion
7	Power Plants (Gas, Thermal)	$0.5–1 million	~30	180	~$5 billion
8	Offsite & Utility Systems	$2–5 million	~5	90	~$1 billion
9	Storage Terminals & Hubs	$5–10 million	~5	180	$3–5 billion
10	TOTAL	~$41–67 million	~106–111	~300 days	~$97–131 billion

Resources

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