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Asia Energy | Asia Pacific

Return of Asian NOCs

NOCs in Asia are in sweet spot as they capitalise on their counter cyclical investments of the past decade at a time when the sector is seeing tightness from years of underinvestment. Policy tailwinds (reversing decade-long headwinds) and lower fuel subsidies lead to strong FCF and DPS growth.

Three Asian listed integrated NOCs (ONGC, PetroChina, PTT) have outperformed (local indices) in the past two years and 2023 YTD. Outperformance comes after a decade of relative underperformance and US\$200bn market cap erosion due to - 1) over investments (~US\$750bn), 2) energy subsidies/losses sustaining at high levels (US\$85bn) and 3) lower oil/gas producer prices leading to returns below cost of capital [Exhibit 2](#). As we look forward, the sector is capital deprived, fuel subsidies are reducing esp. related to gas as policymakers look at energy security [Exhibit 4](#), capital intensity is 15% lower for next three years, ROEs are ~30-40% above last decade's levels, and dividends are naturally stepping up [Exhibit 3](#). The over investments of the last cycle are converting to cashflows as these Asian NOCs see volume growth, which is difficult to get with global majors.

We are OW ONGC, PetroChina and PTT, and see oil/gas prices sustaining above pre-Covid levels, lower government intervention, balance sheet repair, and higher dividends to drive 27-33% upside. The three NOCs should play catchup to International oil companies (IOCs) as they follow a similar path of raising dividends and keeping capex low.

Policy tailwinds reversing years of headwinds: Government policies are increasingly becoming a tailwind for NOCs, a significant contrast to investors' view of government intervention being high. PetroChina is seeing the government make ROE a key performance metric, ONGC is seeing marketing freedom on oil and structurally higher gas ASPs while restructuring its management and internal verticals, and PTT is seeing diesel prices being lifted after multiple decades and higher CNG prices in the country.

Preference order: PetroChina and ONGC over PTT - Cheaper gas prices, higher domestic production, improved capital allocation, and higher ASPs for oil & gas sales as local subsidies reduce are key to our preference order. PetroChina and ONGC see all of these tailwinds supporting a 2x higher ROE vs the past decade. These companies are also seeing higher FCF as they evaluate low return/energy security related investments with high hurdle rates.

Valuations - de-rating to reverse: With 7-10% dividend yield and mid single digit multiples for double digit ROEs, at a time when government policies are increasingly supportive of reducing fuel subsidies and NOCs themselves are slowing investments, make valuations attractive. Stacking them vs. global peers, we do see volume growth being a key differentiator vs. peers guiding for three-year production declines.

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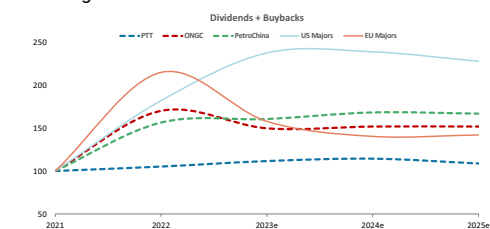
ASEAN Energy and Materials

Asia Pacific

IndustryView

Attractive

Exhibit 1: Asian NOCs vs Global IOCs: Dividends underperformed peers, but they are slowly improving; Volume growth and reduced fuel subsidies also help returning cash to shareholders



Source: Company Data, Morgan Stanley Research (e) estimates

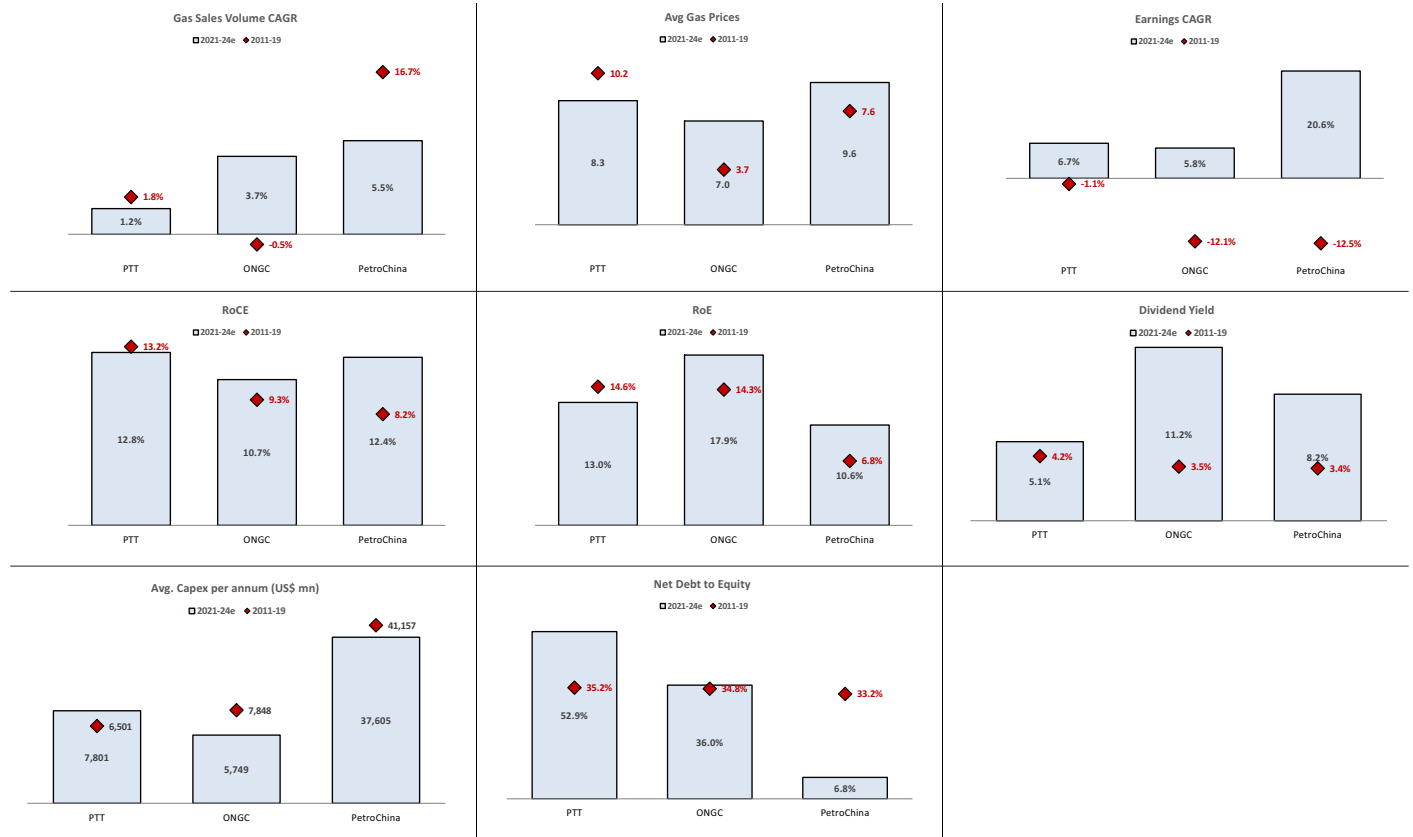
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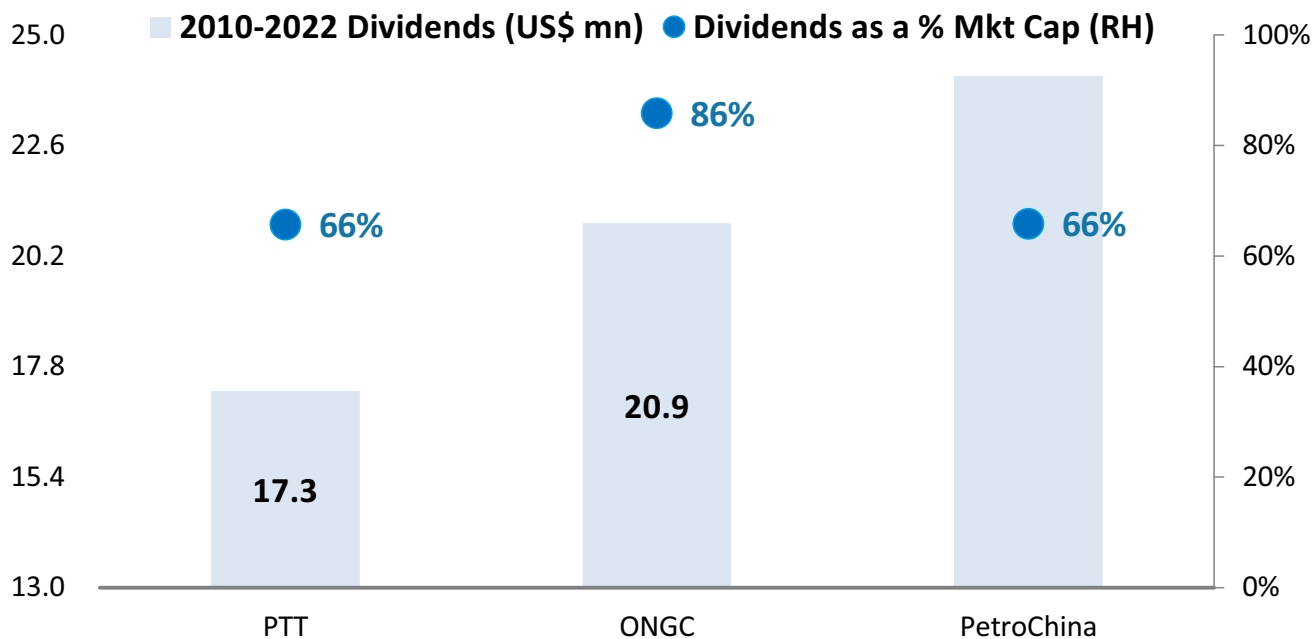
The Metrics: Decade Past and Path Ahead

Exhibit 2: PTT vs. ONGC vs. PetroChina on key metrics



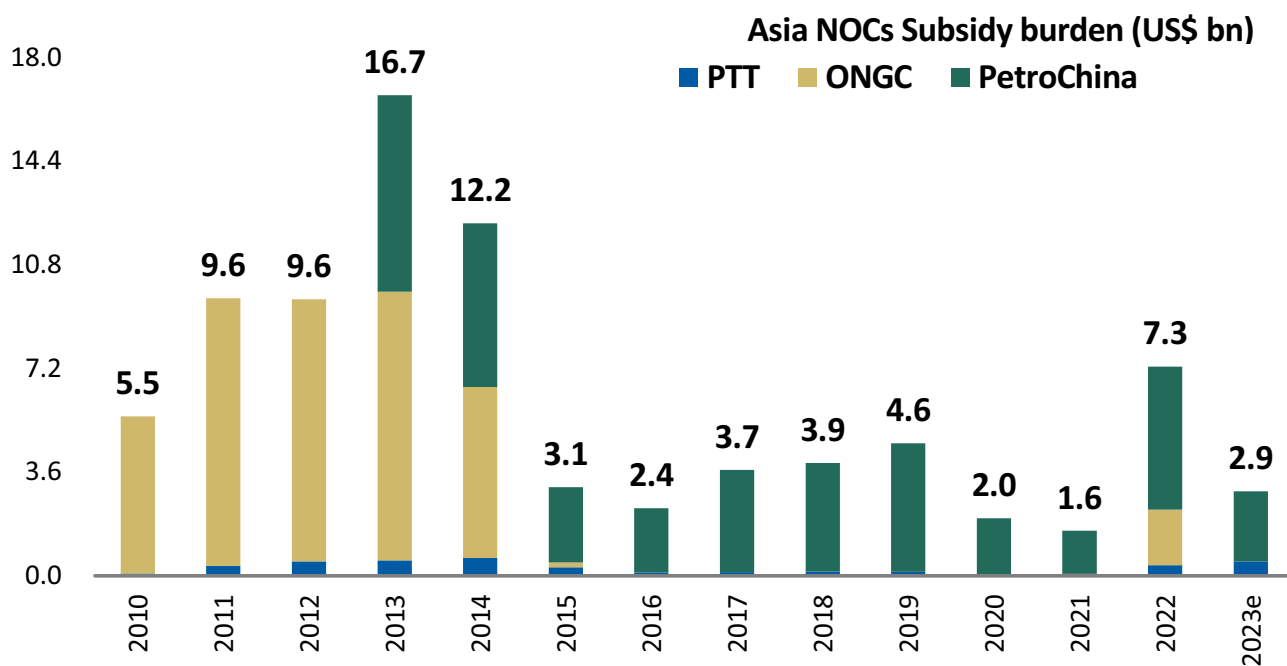
Source: Refinitiv, Company Data, Morgan Stanley Research estimates

Exhibit 3: Dividends for the companies in the last decade, despite challenges, point to significant upside in this decade as both commodity prices are higher, capex lower and fuel subsidies fewer



Source: Company data, Morgan Stanley Research

Exhibit 4: Asia NOCs have seen significant subsidy burdens over the past decade



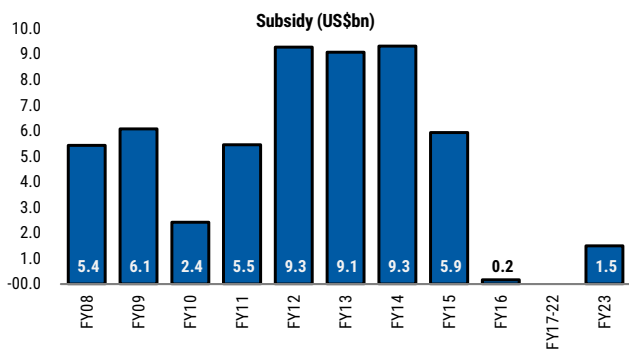
Source: Company data, Morgan Stanley Research (e) estimates

ONGC: Growing Production with Reducing Policy Intervention

ONGC is seeing a structural shift in return quality with a kick-start in production growth (Exhibit 6) after more than a decade, commodity prices remain higher and government policies keep hydrocarbon pricing in India closer to market prices as subsidies unwind (Exhibit 5). While the market did appreciate this shift until mid-2022, the story was somewhat derailed as windfall taxes reduced clarity on the path ahead. However, over the past six months we have seen structural reforms play out for upstream producers and this should slowly unwind decades of challenges. While investors will need more evidence, we believe we are on the cusp of an inflection in earnings quality and returns.

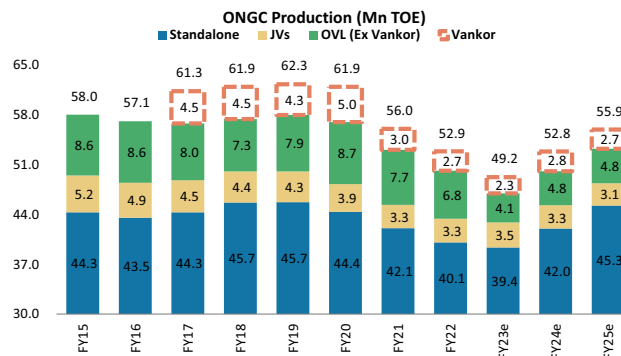
ONGC - Capital return story: ONGC has paid US\$25bn in dividends since 2008, despite falling production and significant government intervention. With 2x higher ASPs for its domestic hydrocarbon production, we see dividends doubling over the next decade even with limited volume growth (Exhibit 7). Improvement in fuel marketing profitability adds to upside risk and we see ONGC's new ROE levels at 18-20%, i.e. **1.5x above last cycle.** (Exhibit 8)

Exhibit 5: ONGC has had ~US\$55bn of subsidy burden since FY08



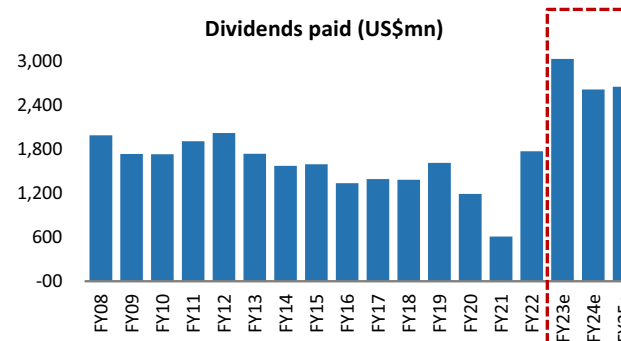
Source: Company, Morgan Stanley Research

Exhibit 6: ONGC: We expect hydrocarbon growth of 6.6% CAGR over the next two years with a rise in domestic gas production and volume recovery from Sakhalin field



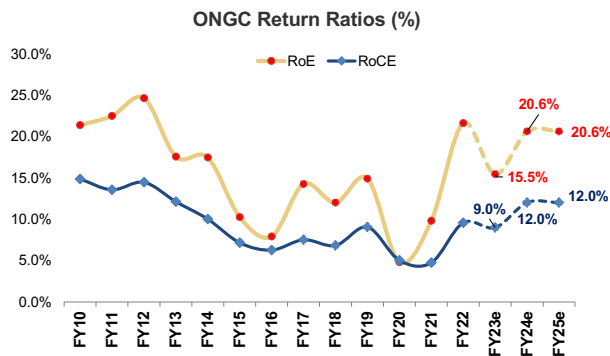
Source: Bloomberg, Morgan Stanley Research (e) Estimates

Exhibit 7: ONGC has paid ~US\$25bn in dividends since 2008, more than the current market cap. We see these dividends rising as ASPs for the company have structurally increased



Source: Company Data, e = Morgan Stanley Research estimates

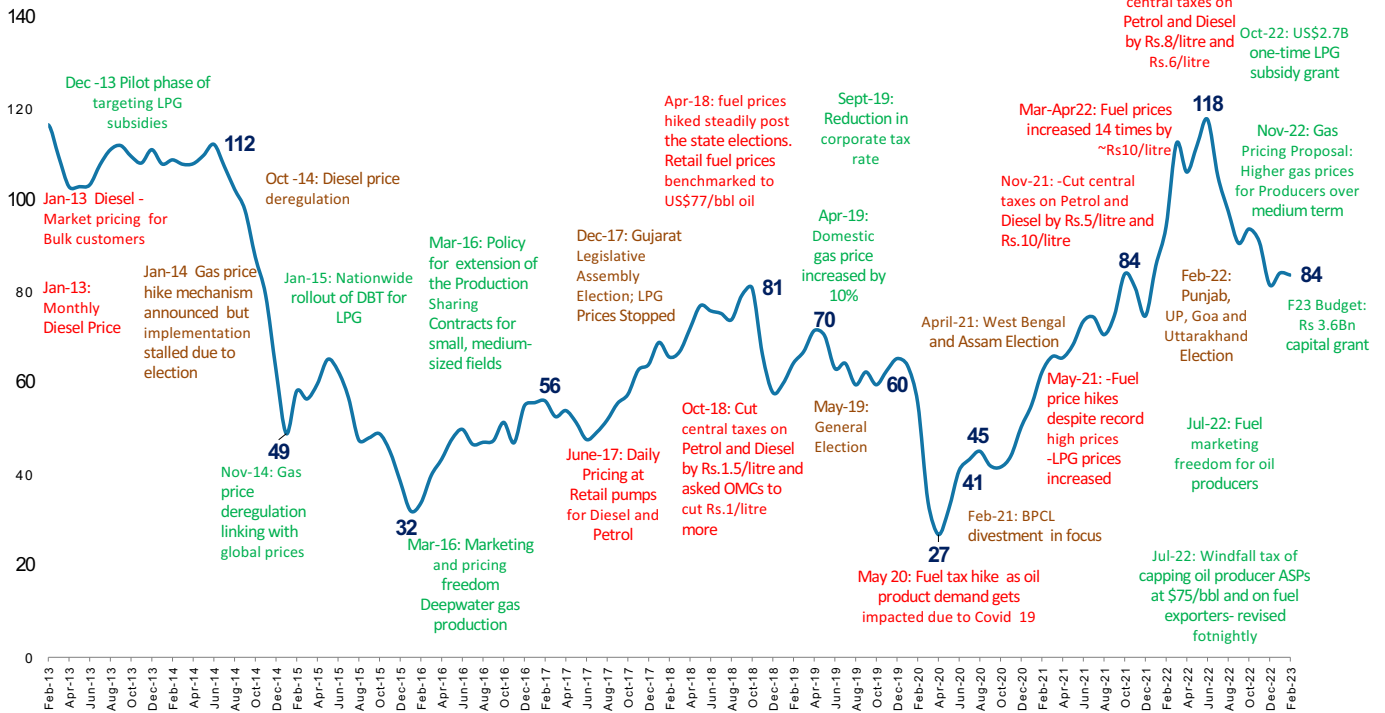
Exhibit 8: ONGC: RoCE and RoE see ~200-300bps expansion over the next two years



Source: Company, Morgan Stanley Research (e) Estimates

Exhibit 9: Government policies have been more constructive for upstream oil and gas producers and gas prices

Brent Price (US\$) bbl. and Timeline of Key Oil & Gas Reforms



Source: DataStream, Morgan Stanley Research

PTT: Cheaper Gas, Lower Government Intervention

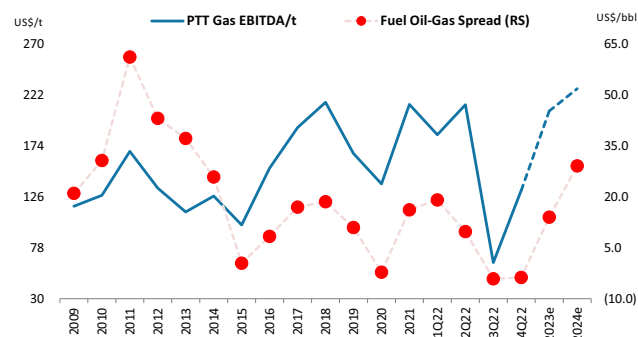
Cheaper gas, reduced government intervention, shift from oil to gas and rising dividends - all ingredients for PTT to outperform global integrated peers in 2023 and reverse the 40% underperformance in 2022. Earnings showed initial signs of recovery in its key gas vertical and we see multiple legs to the story.

Early signs of recovery: We see the recovery in the core gas business in 4Q23 as the first signs of a multi-quarter recovery trend, as EBIDTA run rate steadily normalizes to 50% higher in 2023 - key to it is cheaper LNG prices in Asia, higher domestic gas availability in 2H23, shift from fuel oil/diesel to gas, reduced government intervention for subsidies, and higher jet fuel and petrochemical demand globally and domestically.

Government intervention risks are reducing in our view: PTT provided US\$0.4bn in direct and indirect subsidies - relatively small in terms of its profits, however, it remains a key investor concern. PTT subsidised Bt2bn in 4Q22, apart from lower pipeline tariffs and NGV losses. 2023 could unfold with intervention unwinding - the Thai government raised NGV prices from Oct-22 by Bt1/kg, the oil fund deficit is reducing and PTT is also in discussions with the government to reduce gas-related subsidies of Bt6bn. In addition, recent policy guidelines on allowing a third party to import gas should not dent PTT's market share as it remains well poised to source gas most economically.

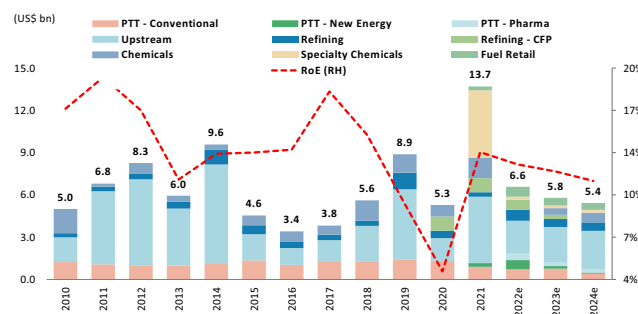
What's in the price? The stock implies US\$60/bbl Brent. The core business is trading at ~40% discount to sum of its parts. On a consolidated basis, valuation at 4.9x 2023e EV/EBITDA with ~7% dividend yield looks compelling to us with sustainable ROE seen at >12%.

Exhibit 10: We see tailwinds from cheaper gas costs underpinning higher fuel oil-gas differentials and driving a better natural gas backdrop for 2023-24



Source: Company data, e = Morgan Stanley Research estimates

Exhibit 11: We expect PTT to generate 11-12% consolidated RoEs as earnings turnaround in 2023, despite the step in capex intensity towards new energy



Source: Company data, Morgan Stanley Research (e) estimates

PetroChina: Financial Summary

Exhibit 12: PetroChina - financial summary

Profit and Loss Statement	2020	2021	2022E	2023E	2024E	Ratio Analysis	2020	2021	2022E	2023E	2024E
Net revenue	1,934	2,614	3,410	3,398	3,452	Growth (%)					
Cost of goods sold	(1,858)	(2,453)	(3,173)	(3,160)	(3,204)	Net revenue	-23%	35%	30%	0%	2%
EBIT	76	161	237	238	249	EBIT	-38%	112%	47%	0%	4%
- E&P	23	68	200	168	164	EBITDA	-17%	38%	11%	4%	4%
- Refining & Chemical	(2)	50	29	34	34	Pretax Profit	-46%	182%	46%	1%	4%
- Marketing	(3)	13	7	9	7	Net Profit	-58%	385%	64%	3%	5%
- Gas	72	44	20	45	60						
Net interest expense	(24)	(17)	(16)	(17)	(20)	Margins (%)					
Exchange gains, net	0	1	(2)	(1)	0	EBITDA margin	15%	16%	13%	14%	14%
Associates and JVs	4	13	12	13	14	EBIT margin	4%	6%	7%	7%	7%
Pretax profit	56	158	231	233	242	Net profit margin	1%	4%	4%	5%	5%
Tax expense	(23)	(44)	(58)	(58)	(61)						
Minority interest	(14)	(23)	(22)	(20)	(20)	Return (%)					
Net profit	19	92	151	154	162	ROE	2%	8%	12%	11%	11%
EBITDA	293	406	452	469	490	ROA	1%	4%	6%	6%	6%
Reported EPS (Rmb)	0.10	0.50	0.82	0.84	0.88	Gearing (%)					
						Net Debt/Equity	18%	14%	8%	4%	1%
Balance Sheet	2020	2021	2022E	2023E	2024E	Long-term Debt/Equity	21%	23%	22%	24%	25%
Net fixed assets	1,452	1,459	1,500	1,537	1,578	Total Debt/Equity	92%	87%	93%	92%	90%
Associates and JVs	251	266	267	268	269	Interest Coverage (EBIT)	3.2	9.6	14.5	13.7	12.7
Other non-current assets	299	296	310	323	336						
Total Non-Current Assets	2,001	2,021	2,076	2,128	2,182	Operational Analysis	2020	2021	2022E	2023E	2024E
Cash & time deposits	146	164	249	347	430	Oil production growth	1.4%	-3.7%	0.2%	0.0%	0.0%
Non-cash assets	341	317	426	425	431	Gas production growth	8.0%	4.7%	5.5%	6.5%	6.5%
Total Current Assets	487	481	675	771	862	Total production growth	4.1%	0.0%	2.6%	3.0%	3.1%
Current borrowings	118	53	56	62	60	Real. oil price (US\$/bbl)	40	66	91	85	85
Other current liabilities	488	465	599	596	606	Real. gas price (US\$/mcf)	4.8	7.6	7.5	7.5	7.5
Total Current Liabilities	605	518	654	658	666	E&P OP Change	-76%	196%	192%	-16%	-2%
Net Assets	1,883	1,984	2,097	2,241	2,378	Crude throughput growth	-4%	4%	3%	8%	1%
Long-term debt	251	287	302	347	381	Refining EBIT (Rmb/ton)	80	72	150	100	100
Other long-term liabilities	416	433	449	463	476	Marketing volume growth	-4%	4%	3%	8%	0%
Shareholders equity	1,215	1,264	1,346	1,431	1,520	Marketing EBIT (Rmb/ton)	(18)	5	8	10	15
Capital Employed	1,883	1,984	2,097	2,241	2,378	Chemical production growth	12%	2%	4%	12%	1%
						Chemical margin (Rmb/ton)	371	371	90	420	420
Cash Flow Statement	2020	2021	2022E	2023E	2024E	Gas volume growth	-4%	10%	5%	6%	6%
Gross Cash Flow	262	403	447	463	483	Gas ASP Change	-7%	9%	1%	2%	2%
Capex	(248)	(262)	(242)	(254)	(267)	Gas EBIT (Rmb/cbm)	0.29	0.16	0.07	0.15	0.19
Working capital adj	57	(61)	(33)	(59)	(58)						
Free Cash Flow	70	80	172	150	158	Valuation	2020	2021	2022E	2023E	2024E
Sale of fixed assets/invmnts	84	38	-	-	-	P/E	20.4	6.9	4.8	4.7	4.5
Share issues	-	-	-	-	-	P/BV	0.3	0.5	0.5	0.5	0.5
Purchase of invmnts/subsids, etc	(13)	(6)	(14)	(14)	(14)	EV/EBITDA	2.6	2.4	2.2	2.0	1.8
Share repurchases	2	2	2	2	3	Dividend yield	8.2%	6.6%	9.4%	9.6%	10.1%
Dividends paid	(28)	(40)	(68)	(70)	(73)	FCF yield	17.8%	12.4%	23.4%	20.4%	21.6%
Net borrowings/repayment	(28)	(26)	17	51	33						
Others	(55)	(29)	(23)	(22)	(25)						
Increase/(decrease in cash)	32	18	85	97	83						
Beginning cash	86	119	137	222	319						
Ending cash	119	137	222	319	402						

Source: Company data, Morgan Stanley Research (E) estimates

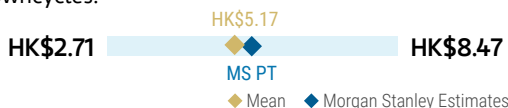
Risk Reward – PetroChina (0857.HK) Top Pick

Beneficiary of China's carbon peak target; gas profit to shift to upstream

PRICE TARGET HK\$5.50

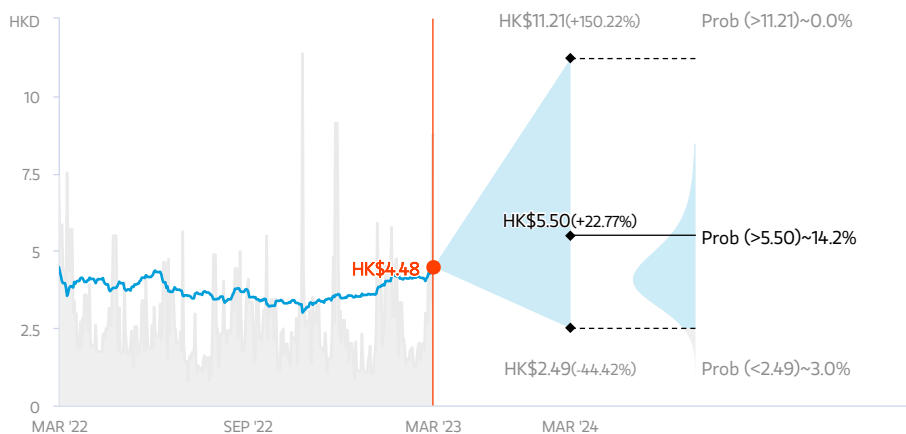
Derived from our SOTP valuation with different earnings assumptions: DCF for E&P, Marketing and Gas segments using a WACC of 9.7% and a long-term growth rate of 0.5%. 0.4x P/B is applied to the refinery and chemicals segments based on industry peers' valuations during refining and chemicals downcycles.

Consensus Price Target Distribution



Source: Refinitiv, Morgan Stanley Research

RISK REWARD CHART AND OPTIONS IMPLIED PROBABILITIES (12M)



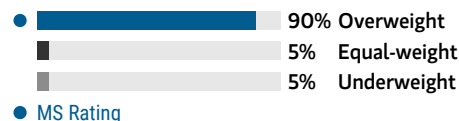
Key: — Historical Stock Performance ● Current Stock Price ◆ Price Target

Source: Refinitiv, Morgan Stanley Research, Morgan Stanley Institutional Equities Division. The probabilities of our Bull, Base, and Bear case scenarios playing out were estimated with implied volatility data from the options market as of 08 Mar, 2023. All figures are approximate risk-neutral probabilities of the stock reaching beyond the scenario price in either three-months' or one-years' time. View explanation of Options Probabilities methodology [here](#)

OVERWEIGHT THESIS

- PetroChina is the most sensitive of the Big Three to oil prices due to significant marginal oilfields exposure, and sees the highest yield at >US\$65 Brent.
- The company's rich natural gas resource is an essential part of China's carbon neutral roadmap and its significant potential is yet to be unlocked.
- Gas segment value is likely to increase as the market-oriented natural gas pricing mechanism takes shape. Imported gas losses should be under control despite rising oil prices.

Consensus Rating Distribution



Source: Refinitiv, Morgan Stanley Research

BULL CASE

HK\$11.21

Implies 1.6x 2023e BVPS

Long-term oil price at US\$95/bbl: Brent oil prices average US\$115/bbl in 2022, US\$110/bbl in 2023, and US\$95/bbl in the long run. Gas potential to be fully unlocked.

BASE CASE

HK\$5.50

Implies 0.7x 2023e BVPS

Long-term oil price at US\$70/bbl: Brent oil prices average US\$101/bbl in 2022, US\$95/bbl in 2023, and US\$70/bbl in the long run. Gas segment potential to be fully unlocked.

BEAR CASE

HK\$2.49

Implies 0.3x 2023e BVPS

Long-term oil price at US\$60/bbl: Brent oil prices average US\$71/bbl in 2022, US\$65/bbl in 2023, and US\$60/bbl in the long run. Gas segment potential is lower than expected due to difficulty to pass through prices to downstream.

Risk Reward – PetroChina (0857.HK)

KEY EARNINGS INPUTS

Drivers	2021	2022e	2023e	2024e
Brent Crude Oil (US\$/bbl)	70.8	99.0	90.0	90.0
Refinery EBIT (Rmb/ton)	72.4	150.3	100.0	100.0
Chemical EBIT (Rmb/ton)	450.0	90.0	420.0	420.0
Gas Volume Growth (%)	13.5	5.0	6.0	6.0

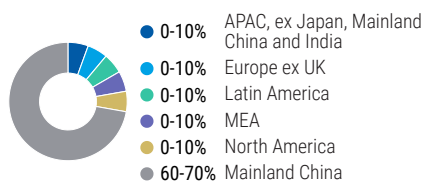
CATALYST CALENDAR

Date	Event	Source: Refinitiv, Morgan Stanley
09 Jun 2023 - 13 Jun 2023	PetroChina Co Ltd Annual Shareholders Meeting	

INVESTMENT DRIVERS

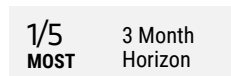
- Crude oil prices.
- Production growth.
- E&P cost control.
- Natural gas prices and pipeline tariff.
- Natural gas import cost.
- Refinery profitability.
- Chemical profitability.
- Implementation of oil & gas industry reforms.

GLOBAL REVENUE EXPOSURE



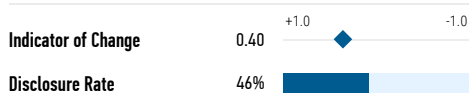
Source: Morgan Stanley Research Estimate
View explanation of regional hierarchies [here](#)

MS ALPHA MODELS



Source: Refinitiv, FactSet, Morgan Stanley Research; 1 is the highest favored Quintile and 5 is the least favored Quintile

SUSTAINABILITY & ESG



RISKS TO PT/RATING

RISKS TO UPSIDE

- Stronger-than-expected Chinese economic growth and demand.
- Higher-than-expected oil price.
- Higher-than-expected gas demand growth.
- Gas reform pushes up gas price.
- Higher-than-expected valuation on pipeline assets.

RISKS TO DOWNSIDE

- Weaker-than-expected Chinese economic growth and demand.
- Lower-than-expected oil price.
- Higher-than-expected cost inflation.
- Lower-than-expected gas demand growth.

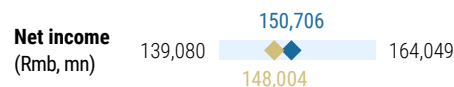
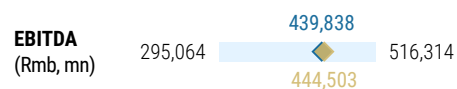
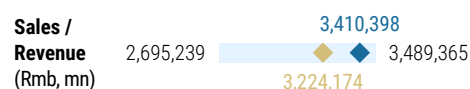
OWNERSHIP POSITIONING



Source: Refinitiv, Morgan Stanley Research

MS ESTIMATES VS. CONSENSUS

FY Dec 2022e



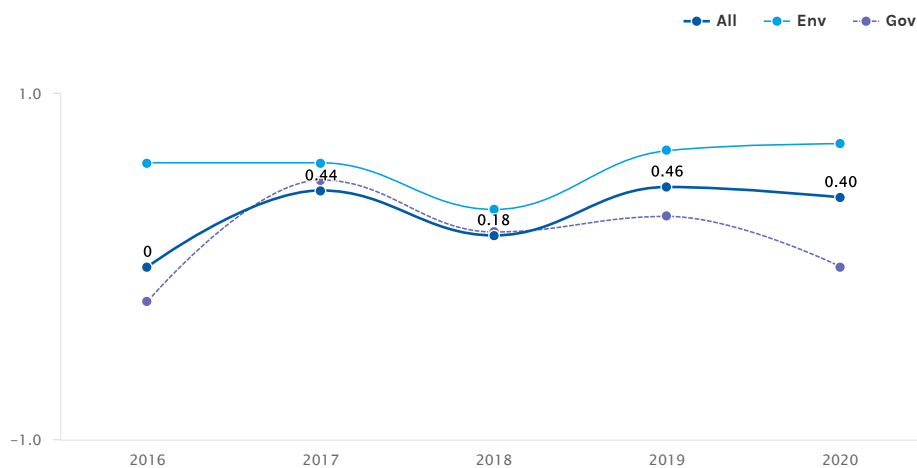
◆ Mean ◆ Morgan Stanley Estimates

Source: Refinitiv, Morgan Stanley Research

Risk Reward – PetroChina (0857.HK)

SUSTAINABILITY AND ESG

INDICATOR OF CHANGE OVER TIME



SUMMARY

PetroChina targets to achieve near net zero emissions by 2050, earlier than the Chinese government's target of 2060. Meanwhile, the company will also increase investment in new energy segments including wind, solar, geothermal and hydrogen.

Environment	Unit	Dec '18	Dec '19	Dec '20
CO2 emissions (Scope 1 and 2)	Million tons CO2 equivalent	-	174.08	167.44
Energy consumption	Million tonnes of coal equivalent	84.40	87.03	126.07
Water consumption	Million cubic meters	800.05	793.83	769.95
Social				
Avg training hrs per employee	Hours	-	27.50	40.00
Employee engagement	thousand	476.20	-	-
Fatalities		-	-	2
Governance				
Avg tenure of the board	Years	2.83	3.56	4.14
Female board members	Percentage	9.09%	11.11%	9.09%
Females in management	Percentage	0.00%	-	-
Independent board members	Percentage	45.45%	55.56%	45.45%
Shares owned by board members	Percentage	0%	0%	0%

Indicator of change chart is plotted using the fiscal aligned methodology. View explanation of 'Indicator of Change' methodology [here](#)

Source: Company Data, Morgan Stanley Research

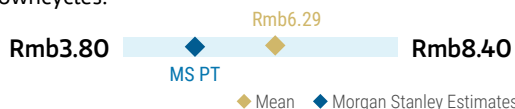
Risk Reward – PetroChina (601857.SS)

PetroChina's A-shares Trading at a Significant Premium to H-shares; UW

PRICE TARGET Rmb4.95

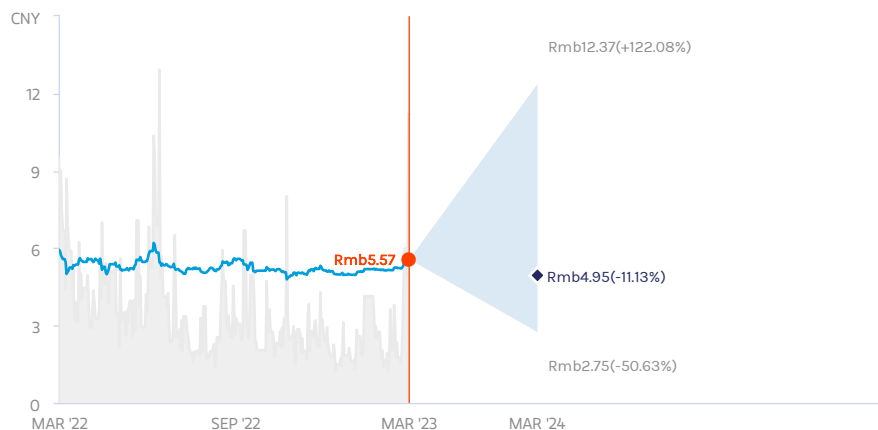
We derive PetroChina-A's PT by converting PetroChina-H's PT of HK\$5.5 using RMB/HKD rate of 1.11. Derived from our SOTP valuation with different earnings assumptions: DCF for E&P, Marketing and Gas segments using a WACC of 9.7% and a long-term growth rate of 0.5%. 0.4x P/B is applied to the refinery and chemicals segments based on industry peers' valuations during refining and chemicals downcycles.

Consensus Price Target Distribution



Source: Refinitiv, Morgan Stanley Research

RISK REWARD CHART



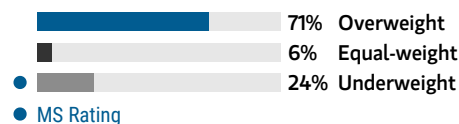
Key: — Historical Stock Performance ● Current Stock Price ◆ Price Target

Source: Refinitiv, Morgan Stanley Research

UNDERWEIGHT THESIS

- PetroChina is the most sensitive of the Big Three to oil prices due to significant marginal oilfields exposure, and sees the highest yield at >US\$65 Brent.
- The company's rich natural gas resource is an essential part of China's carbon neutral roadmap and its significant potential is yet to be unlocked.
- Gas segment value is likely to increase as the market-oriented natural gas pricing mechanism takes shape. Imported gas losses should be under control despite rising oil prices.
- However, A-shares are now trading at a significant premium to the H-shares, unjustified in our view.

Consensus Rating Distribution



Source: Refinitiv, Morgan Stanley Research

BULL CASE

Rmb12.37

Implies 1.6x 2023e BVPS

Long-term oil price at US\$95/bbl: Brent oil prices average US\$115/bbl in 2022, US\$110/bbl in 2023, and US\$95/bbl in the long run. Gas potential to be fully unlocked.

BASE CASE

Rmb4.95

Implies 0.6x base case 2023e BVPS

Long-term oil price at US\$70/bbl: Brent oil prices average US\$101/bbl in 2022, US\$95/bbl in 2023, and US\$70/bbl in the long run. Gas segment potential to be fully unlocked.

BEAR CASE

Rmb2.75

Implies 0.3x 2023e BVPS

Long-term oil price at US\$60/bbl: Brent oil prices average US\$71/bbl in 2022, US\$65/bbl in 2023, and US\$60/bbl in the long run. Gas segment potential is lower than expected due to difficulty to pass through prices to downstream.

Risk Reward – PetroChina (601857.SS)

KEY EARNINGS INPUTS

Drivers	2021	2022e	2023e	2024e
Brent Crude Oil (US\$/bbl)	70.8	99.0	90.0	90.0
Refinery EBIT (Rmb/ton)	72.4	150.3	100.0	100.0
Chemical EBIT (Rmb/ton)	450.0	90.0	420.0	420.0
Gas Volume Growth (%)	13.5	5.0	6.0	6.0

CATALYST CALENDAR

Date	Event	Source: Refinitiv, Morgan Stanley
09 Jun 2023 - 13 Jun 2023	PetroChina Co Ltd Annual Shareholders Meeting	

INVESTMENT DRIVERS

- Crude oil prices.
- Production growth.
- E&P cost control.
- Natural gas prices and pipeline tariff.
- Natural gas import cost.
- Refinery profitability.
- Chemical profitability.
- Implementation of oil & gas industry reforms.

RISKS TO PT/RATING

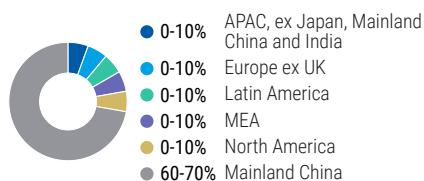
RISKS TO UPSIDE

- Higher-than-expected oil prices.
- Stronger-than-expected demand for oil and gas.
- Better-than-expected control on capex and E&P costs.
- Larger-than-expected pipeline revaluation.
- Less-than-expected cuts to gas prices, pipeline tariffs.

RISKS TO DOWNSIDE

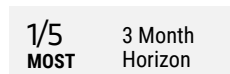
- Lower-than-expected oil prices.
- Weaker-than-expected oil and gas demand.
- Worse-than-expected control on capex and E&P costs.
- Lower-than-expected pipeline revaluation.

GLOBAL REVENUE EXPOSURE



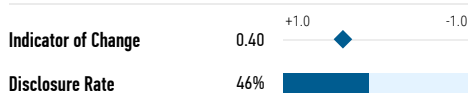
Source: Morgan Stanley Research Estimate
View explanation of regional hierarchies [here](#)

MS ALPHA MODELS



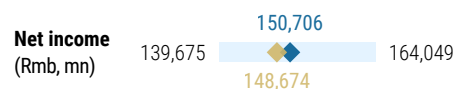
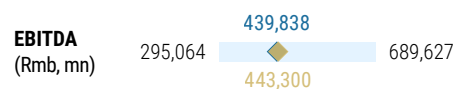
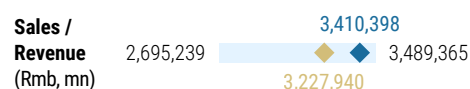
Source: Refinitiv, FactSet, Morgan Stanley Research; 1 is the highest favored Quintile and 5 is the least favored Quintile

SUSTAINABILITY & ESG



MS ESTIMATES VS. CONSENSUS

FY Dec 2022e



◆ Mean ◆ Morgan Stanley Estimates

Source: Refinitiv, Morgan Stanley Research

OWNERSHIP POSITIONING

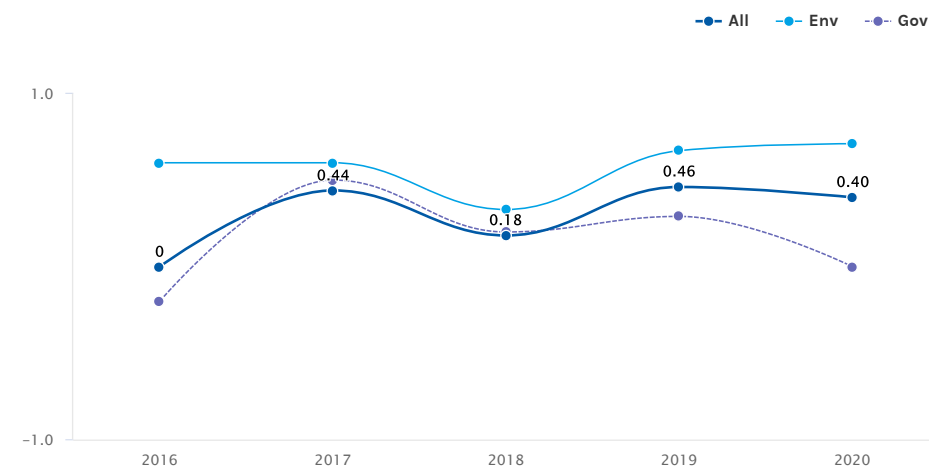


Source: Refinitiv, Morgan Stanley Research

Risk Reward – PetroChina (601857.SS)

SUSTAINABILITY AND ESG

INDICATOR OF CHANGE OVER TIME



SUMMARY

PetroChina targets to achieve near net zero emissions by 2050, earlier than the Chinese government’s target of 2060. Meanwhile, the company will also increase investment in new energy segments including wind, solar, geothermal and hydrogen.

Environment	Unit	Dec '18	Dec '19	Dec '20
CO2 emissions (Scope 1 and 2)	Million tons CO2 equivalent	-	174.08	167.44
Energy consumption	Million tonnes of coal equivalent	84.40	87.03	126.07
Water consumption	Million cubic meters	800.05	793.83	769.95
Social				
Avg training hrs per employee	Hours	-	27.50	40.00
Employee engagement	thousand	476.20	-	-
Fatalities		-	-	2
Governance				
Avg tenure of the board	Years	2.83	3.56	4.14
Female board members	Percentage	9.09%	11.11%	9.09%
Females in management	Percentage	0.00%	-	-
Independent board members	Percentage	45.45%	55.56%	45.45%
Shares owned by board members	Percentage	0%	0%	0%

Indicator of change chart is plotted using the fiscal aligned methodology. View explanation of 'Indicator of Change' methodology [here](#)

Source: Company Data, Morgan Stanley Research

ONGC - Financial Summary

Exhibit 13: Financial Summary

Income Statement

Rs bn (Year-end March)	FY21	FY22	FY23e	FY24e	FY25e
Gross Sales	3606	5318	8972	8705	8011
- Share of Subsidy	0	0	0	0	0
- Duties	566	405	771	765	750
Net Revenues	3040	4913	8202	7940	7261
Cost of Goods Sold	2474	4055	7389	6842	6159
Raw Materials Consumed	1913	3319	6383	5827	5245
Statutory Levies	180	309	494	474	329
Operating Expenses	381	428	511	541	585
EBITDA	566	858	813	1098	1102
DD&A	255	269	249	301	320
Exploration Costs	71	59	73	51	46
EBIT	239	530	491	746	735
Non Operating Income	80	67	99	96	105
Financial Expenses	51	57	52	59	56
Profit before Tax	268	540	538	783	784
Total Taxes	88	48	137	203	206
Consol PAT: Adjusted	181	492	401	580	578
Non Recurring Items	-22	14	0	0	0
Net Profit: Reported	203	478	401	580	578
- Minority Interest	51	38	-46	35	29
+ Income from Associate	10	15	9	8	7
Adjusted Cons. Net Profit	140	469	457	553	556
Reported PAT: Group	162	455	457	553	556
EBITDA Break-up	566	858	813	1098	1100
ONGC	328	599	829	827	834
OVL	82	108	41	65	73
HPCL	159	95	-89	148	140
MRPL	1	49	32	58	54
Others	-5	5	0	0	0
PAT Break-up	140	469	457	553	556
ONGC	99	403	488	477	483
OVL	16	31	3	13	18
MRPL	-13	30	7	26	24
HPCL	107	58	-97	64	52
Others	-68	-52	56	-27	-21
Oil Price Assumptions (US\$/bbl)					
Brent	45.9	80.0	96.3	90.0	75.0
Domestic Net Realisation	42.7	76.5	93.7	87.4	74.0
Hydrocarbon Production (mntoe)					
Standalone	42.1	40.1	39.4	42.0	45.3
Oil	20.2	19.5	19.7	20.3	20.7
Gas	21.9	20.6	19.7	21.7	24.6
Consolidated	53.9	51.2	47.7	50.8	54.1
Oil	28.2	27.0	24.7	25.9	26.7
Gas	25.8	24.2	23.1	24.9	27.4

Cash Flow Statement

Rs bn (Year-end March)	FY21	FY22	FY23e	FY24e	FY25e
Profit After Taxes	162	455	457	553	556
Recouped Costs	327	328	322	352	367
Interest Charges	51	57	52	59	56
ΔWorking Capital	32	171	-74	71	-67
Operating Cash Flows	572	1011	757	1034	912
Capex	-488	-498	-337	-511	-487
Purchase of Investments	-91	-230	0	0	0
Others	-7	-71	0	0	0
Investing Cash Flows	-586	-799	-337	-511	-487
Liability for Abandonment	30	2	48	49	49
Change in Debt	35	-113	31	-86	31
Interest Charges	-51	-57	-52	-59	-56
Dividends Paid	-50	-135	-247	-217	-220
Others Non Cash changes	66	87	-44	38	32
Financing Cash Flows	30	-216	-263	-276	-165
Net Change in Cash	16	-4	157	248	260
Cash & Cash Equivalents	16	-4	157	248	260
Beginning Balance	110	126	122	279	527
Ending Balance	126	122	279	527	787

Source: Company Data, Morgan Stanley Research (e) Estimates

Balance Sheet

Rs bn (Year-end March)	FY21	FY22	FY23e	FY24e	FY25e
SOURCES OF FUNDS					
Equity Share Capital	63	63	63	63	63
Reserves and Surplus	2147	2532	2745	3083	3421
Shareholders Funds	2210	2595	2808	3146	3484
Minority Interest	216	238	192	227	256
Deferred Tax Liability - net	454	383	383	383	383
Loan Funds	1191	1078	1109	1023	1054
Abandonment Cost	361	363	411	460	509
Total	4432	4657	4902	5238	5686
APPLICATION OF FUNDS					
Net Block	909	998	1219	1306	1353
Capital Work in progress	629	715	507	563	612
Net Producing Properties	1393	1434	1468	1496	1522
Expl. Wells in Progress	372	350	317	306	304
Net Fixed Assets	3304	3497	3512	3671	3791
Goodwill	135	112	112	112	112
Net Investments	383	613	613	613	613
Current Assets	1611	1633	2026	2226	2429
Inventories	446	542	771	711	653
Sundry Debtors	160	192	249	242	232
Cash & Cash Balance	126	122	279	527	787
Loans and Advances	36	31	22	22	23
Site Restoration Fund	235	249	249	249	249
Others Assets	608	497	456	476	485
Current Liabilities	1001	1198	1360	1383	1258
Net Current Assets	610	435	666	843	1170
Total	4432	4657	4902	5238	5686

Key Metrics

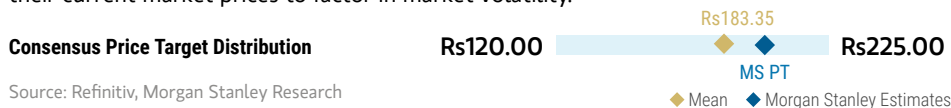
	FY21	FY22	FY23e	FY24e	FY25e
Reported EPS	12.9	36.2	36.3	43.9	44.2
Modelware EPS (Rs)	11.1	37.3	36.3	43.9	44.2
EPS Growth	-22%	235%	-3%	21%	1%
P/E	12.9	3.9	4.0	3.3	3.3
Book Value (Rs)	175.7	206.3	223.2	250.1	277.0
P/BV	0.8	0.7	0.6	0.6	0.5
DPS (Rs)	3.6	10.5	19.4	17.1	17.3
Yield (%)	2.5%	7.3%	13.5%	11.8%	12.0%
EV/EBITDA	5.5	3.5	3.5	2.3	2.1
EV/BOE	3.6	3.2	3.0	2.7	2.4
FCF Yield	0.9%	12.8%	20.9%	22.8%	24.8%
Profitability Ratios					
NPM (%)	4.6%	9.6%	5.6%	7.0%	7.7%
ROCE (%)	4.8%	9.6%	9.0%	12.0%	11.1%
RONW (%)	9.8%	21.6%	15.5%	20.6%	18.4%
Other Ratios					
Debt/Equity (%)	53.9%	41.5%	39.5%	32.5%	30.2%
Effective Tax Rate	32.6%	8.9%	25.4%	26.0%	26.2%

Risk Reward – Oil & Natural Gas Corp. (ONGC.NS)

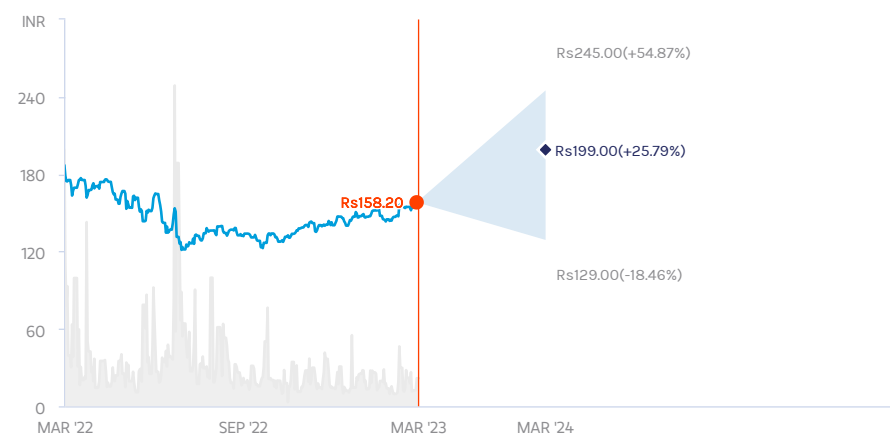
Growing Production with Reducing Policy Intervention

PRICE TARGET **Rs199.00**

Rs199: base case, sum of the parts.
 ONGC and ONGC Videsh Ltd (100%-owned subsidiary): WACC 13.3%, terminal growth rate 0%.
 51.11% stake in HPCL: 25% holdco discount to Morgan Stanley price target.
 We add the value of equity investments in IOCL, GAIL, PLNG, and MRPL at a 25% discount to their current market prices to factor in market volatility.



RISK REWARD CHART



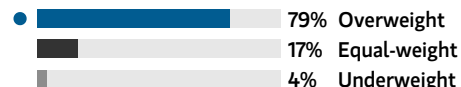
Key: — Historical Stock Performance ● Current Stock Price ◆ Price Target

Source: Refinitiv, Morgan Stanley Research

OVERWEIGHT THESIS

- Domestic gas prices should be sustained at higher levels after a global gas glut of the past five years kept them low.
- We expect gas to account for 52% of ONGC's domestic hydrocarbon production and 47% of consolidated production by F24.
- ONGC is slowly raising domestic gas production, which should restore earnings to 2018 levels after multiple years of declines and negate some of the volume growth challenges that it faced over the past decade.
- Windfall taxes and an ad hoc approach in policy framework are key challenges for earnings quality.

Consensus Rating Distribution



● MS Rating

Source: Refinitiv, Morgan Stanley Research

Risk Reward Themes

Self-help: *Positive*

View descriptions of Risk Rewards Themes [here](#)

BULL CASE	Rs245.00	BASE CASE	Rs199.00	BEAR CASE	Rs129.00
5.5x bull case F24e EPS		4.5x base case F24e EPS		3.1x bear case F24e EPS	
1. Long-term net crude oil realization of US\$78/bbl		1. Long-term Brent oil price at US\$75/bbl and realization of US\$74/bbl		1. Long term net crude oil realization of US\$59/bbl	
2. Long-term gas price at US\$7/mmbtu as gas markets remain tight		2. Long-term natural gas price at US\$5/mmbtu		2. Long-term gas price at US\$4/mmbtu	
		3. WACC of 13.3%		3. De-rating in response to lack of clarity on decarbonization	

Risk Reward – Oil & Natural Gas Corp. (ONGC.NS)

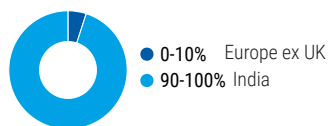
KEY EARNINGS INPUTS

Drivers	2022	2023e	2024e	2025e
Oil Realisations (\$/bbl)	76.5	93.7	87.4	74.0
Oil Sales (mmt)	20.3	18.6	18.8	18.9
Gas Realisations (\$/mmbtu)	2.9	7.4	7.0	7.0
Gas Sales (BCM)	16.8	15.2	16.7	18.7

INVESTMENT DRIVERS

- Global oil prices
- Domestic gas prices and production growth

GLOBAL REVENUE EXPOSURE



Source: Morgan Stanley Research Estimate
View explanation of regional hierarchies [here](#)

MS ALPHA MODELS

2/5
MOST 3 Month Horizon

Source: Refinitiv, FactSet, Morgan Stanley Research; 1 is the highest favored Quintile and 5 is the least favored Quintile

SUSTAINABILITY & ESG



RISKS TO PT/RATING

RISKS TO UPSIDE

- Growth in domestic and overseas production, esp. in Colombia, and extension of Vietnam license
- Clarity on time line for unwinding windfall tax
- Improving refinery subsidiary profitability

RISKS TO DOWNSIDE

- Slower-than-expected production growth
- Challenges to operations in international market
- Rising debt at subsidiary HPCL
- Continuation of ad hoc approach to government policy

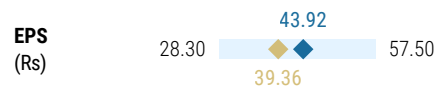
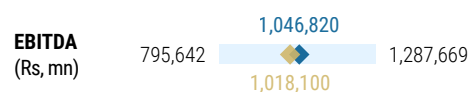
OWNERSHIP POSITIONING

Inst. Owners, % Active 91.1%

Source: Refinitiv, Morgan Stanley Research

MS ESTIMATES VS. CONSENSUS

FY Mar 2024e



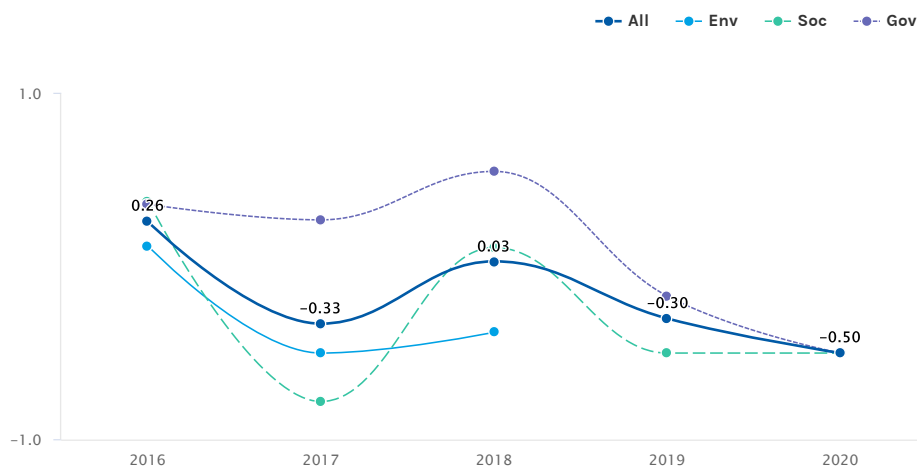
◆ Mean ◆ Morgan Stanley Estimates

Source: Refinitiv, Morgan Stanley Research

Risk Reward – Oil & Natural Gas Corp. (ONGC.NS)

SUSTAINABILITY AND ESG

INDICATOR OF CHANGE OVER TIME



Environment	Unit	Mar '19	Mar '20	Mar '21
CO2 emissions (Scope 1 and 2)	Million tonnes CO2 equivalent	25.31	-	-
Energy consumption	Terajoules	276,179	-	-
Total waste	tonnes	158,524	-	-
Water consumption	Million cubic meters	77.12	-	-
Water recycled	Percentage	9.81%	-	-
Social				
# of complaints, recalls, product investigations		2	52	22
Avg training hrs per employee	Hours	43.92	48.13	40.09
Community spending	INR Million	7,044	6,070	5,388
Employee turnover	Percentage	7.32%	-	-
Fatalities		9	-	-
Lost time injury rate	Injuries per 1,000,000 hours worked	0.53	-	-
Unionized employees	Percentage	34.00%	-	-
Governance				
Avg tenure of the board	Years	2.26	2.33	2.72
Female board members	Percentage	11.76%	20.00%	10.00%
Females in management	Percentage	7.47%	-	-
Independent board members	Percentage	47.06%	20.00%	10.00%
Shares owned by board members	Percentage	0%	-	-

Indicator of change chart is plotted using the fiscal aligned methodology. View explanation of 'Indicator of Change' methodology [here](#)

Source: Company Data, Morgan Stanley Research

SUMMARY

ONGC will continue to play the anchor role in India's energy security until 2040 while preparing itself for energy transition by consolidating its presence across low carbon businesses like petchem & renewables.

Renewables

ONGC has an MoU with NTPC aimed at exploring and setting up renewable power assets including offshore wind, in India and overseas.

During F20 it implemented 7 MW of solar power plants, and projects for 6.6 MW are in the final stages of implementation. Two wind power projects – 102 MW at Jaisalmer, Rajasthan and 51 MW at Kutch, Gujarat – are operational.

Electric Vehicles

In March 2019, the first batch of five electric vehicles were flagged off under a pilot project at Delhi, in collaboration with EESL.

Sustainable Water Management

Water management projects like rain water harvesting, sewage treatment plants, and re-use of produced water have been implemented.

PTT - Financial Summary

Exhibit 14: Financial Summary
Income Statement

Bt Million	2021	2022e	2023e	2024e
Net Revenues	2,261,761	4,479,297	3,969,856	3,400,380
Cost of sales and services	1,726,667	3,734,172	3,247,368	2,713,108
Total Expenses	101,759	216,991	204,717	188,528
Petroleum exploration expenses	16,995	55,636	38,948	41,975
Petroleum royalties	17,978	26,049	32,427	32,357
EBITDA	398,363	446,449	446,396	424,411
Depreciation	147,122	154,154	160,532	168,427
EBIT	251,241	292,295	285,864	255,985
Net interest cost	25,641	29,837	27,806	23,935
Other income	23,475	8,910	8,065	7,304
Associates Income	9,010	4,505	5,406	5,406
Pre-tax profit	219,658	275,873	271,528	244,759
Income taxes	67,591	81,410	79,837	59,838
Net profit	152,067	194,463	191,692	184,921
Minority interest	43,704	63,786	59,635	53,137
Net profit to equity shareholders	108,363	130,676	132,056	131,784
Core Net Profit to shareholders	146,789	130,676	132,056	131,784

Ratio Analysis

	2021	2022e	2023e	2024e
Per Share Data				
MV/EPS (Bt per share)	3.79	4.58	4.62	4.61
Dividends	2.1	2.3	2.3	2.3
P/E (Consolidated)	7.4	7.4	7.4	7.4
EV/EBITDA	5.1	5.0	5.0	5.0
Dividend Yield	5.8%	6.4%	6.4%	6.4%
Price Book	1.0	1.0	0.9	0.9
Return Ratios				
ROE	15.5%	12.7%	12.2%	11.5%
ROCE	13.7%	13.6%	12.5%	11.2%
Leverage				
Net debt/equity	0.5	0.7	0.5	0.4
Debt/equity	0.9	0.8	0.6	0.5
Interest coverage	8.9	9.1	10.3	10.7

Source: Company data, Morgan Stanley Research (e) estimates

Balance Sheet

Baht million	2021	2022e	2023e	2024e
Sources Of Fund				
Shareholder's equity	1,006,697	1,051,251	1,117,280	1,183,171
Minority Interest	466,243	530,030	589,665	642,803
Debt	949,825	819,121	704,508	607,023
Deferred Tax Liability	95,945	82,664	82,664	82,664
Non Current liabilities	175,788	168,443	175,783	183,085
Total Liabilities	2,694,499	2,651,510	2,669,900	2,698,746
Application of Funds				
Net Fixed Assets	1,421,008	1,545,223	1,599,186	1,612,573
Intangible assets	249,461	262,516	262,516	262,516
Goodwill	262,072	262,072	262,072	262,072
Investments	175,243	229,783	234,732	239,681
Cash & Cash Equivalents	312,730	38,775	21,317	60,768
Current Assets	540,676	618,604	537,107	453,989
Inventories	168,994	196,679	170,662	136,326
Non Current assets	116,828	112,598	114,907	117,215
Total Assets	2,694,499	2,651,510	2,669,900	2,698,746

Cashflow Statement

Baht million	2021	2022e	2023e	2024e
Profit after tax	146,789	130,676	132,056	131,784
Add : Depreciation	147,122	154,154	160,532	168,427
Cash flow from operations	293,911	284,830	292,588	300,210
Net change in Working capital	(9,207)	(82,277)	30,404	36,243
Net cash from operations	284,705	202,554	322,992	336,453
Capital expenditure	(373,862)	(292,923)	(214,495)	(181,814)
Investments	(40,525)	(30,547)	(4,949)	(4,949)
Net cash from investing	(414,387)	(323,470)	(219,444)	(186,763)
Change in minority interest	62,439	63,786	59,635	53,137
Dividends paid	(59,600)	(65,338)	(66,028)	(65,892)
Change in debt	154,322	(130,703)	(114,614)	(97,485)
Other financing cash flow	37,467	(20,784)	0	0
Net cash from financing	110,381	(153,039)	(121,007)	(110,239)

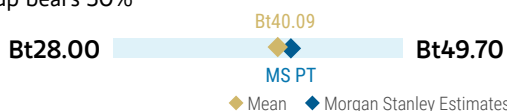
Risk Reward – PTT Public Company (PTT.BK)

The LNG Play

PRICE TARGET Bt41.00

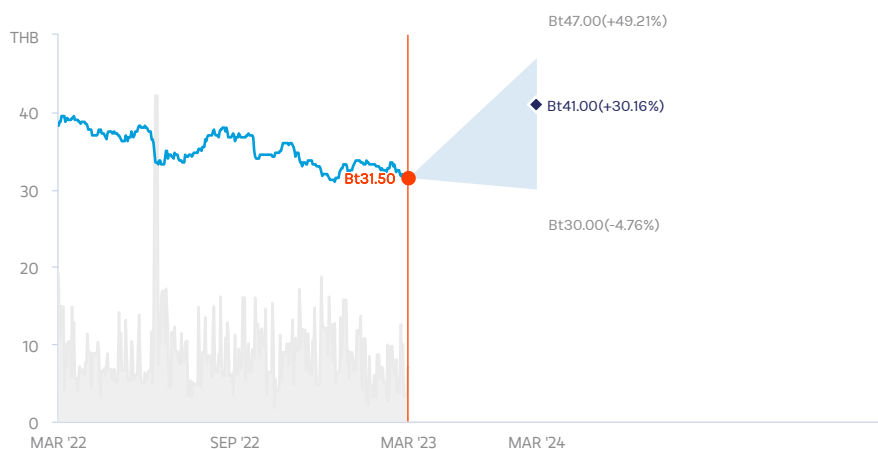
Gas Transmission: EV/EBITDA multiple of 6.0x on 2023e EBITDA, in line with the current peer utility average.
GSP business: EV/EBITDA multiple of 6.0x to 2023e EBITDA, in line with global chemical and marketing peers.
Associates: MS price targets for PTTEP, Thai Oil, PTTGC, IRPC and OR with holding company discount of 30%.
Carbon tax impact: US\$20/t, assuming group bears 50%

Consensus Price Target Distribution



Source: Refinitiv, Morgan Stanley Research

RISK REWARD CHART



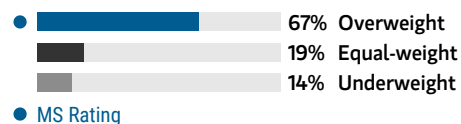
Key: — Historical Stock Performance ● Current Stock Price ◆ Price Target

Source: Refinitiv, Morgan Stanley Research

OVERWEIGHT THESIS

- PTT is a play on the steady normalising in LNG costs and benefits from improving domestic demand and rising oil-to-gas differentials.
- Robust downstream margin trends will also reflect in strong associate contribution, while higher oil prices drive better contribution from PTTEP
- Clarity on new investments and capital allocation shift to new energy investments should also drive upside risks to multiples, while maintain top-quartile RoEs over 2024.
- PTT's core business is trading at above median levels discount to parts. We see this compressing as earnings from core business surprises positively

Consensus Rating Distribution



Source: Refinitiv, Morgan Stanley Research

Risk Reward Themes

Disruption: *Positive*
 Electric Vehicles: *Positive*
 Pricing Power: *Positive*

View descriptions of Risk Rewards Themes [here](#)

BULL CASE

Bt47.00

10.2x bull case 2023e EPS

- 1) 10% holding company discount; PTTEP, Thai Oil, PTTGC valued at our bull case values.
- 2) 10% higher chemical PE prices in 2023 as demand continues to remain resilient.
- 3) LNG costs unwind faster than expected
- 4) 2023 gas demand surprises on the upside by 10%

BASE CASE

Bt41.00

8.9x base case 2023e EPS

- 1) 30% discount for all subsidiaries and affiliates; non-listed affiliates valued at book value.
- 2) Brent oil price of US\$90/bbl in 2023e, gas demand rises 3% in 2023
- 3) 16% EBITDA margin in 2023 for Gas segment

BEAR CASE

Bt30.00

6.1x bear case 2023e EPS

- 1) Brent crude oil price of ~US\$50/bbl; PTTEP disappoints by 10% on volume growth in 2023
- 2) No recovery in chemical demand/prices
- 3) 15% lower gas demand.

Risk Reward – PTT Public Company (PTT.BK)

KEY EARNINGS INPUTS

Drivers	2021	2022e	2023e	2024e
Gas Sales Volumes (mmscfd)	4,437.0	4,341.7	4,472.3	4,603.8
HDPE Price (US\$/mt)	1,153.0	1,249.7	1,286.7	1,425.8
Natural Gas Cost (US\$/mt)	293.0	339.5	270.8	254.6
Gross Margin/mn liter (Bt/ltr)	1.66	1.37	1.50	1.51

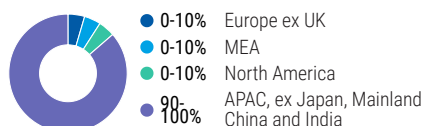
CATALYST CALENDAR

Date	Event	Source: Refinitiv, Morgan Stanley
11 May 2023	Q1 2023 PTT PCL Earnings Release	

INVESTMENT DRIVERS

- Higher dividend payout.
- Chemical demand recovery and higher oil prices
- Higher chemical prices.

GLOBAL REVENUE EXPOSURE



Source: Morgan Stanley Research Estimate
View explanation of regional hierarchies [here](#)

RISKS TO PT/RATING

RISKS TO UPSIDE

- Higher dividend payout
- Normalising LNG costs
- Higher oil-to-gas differentials

RISKS TO DOWNSIDE

- Investments in unrelated/low ROCE businesses.
- Demand risks drive oil prices to <US\$50/bbl.
- Imposition of carbon taxes

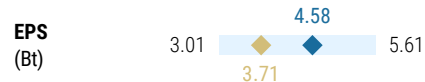
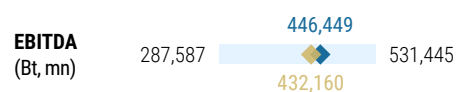
OWNERSHIP POSITIONING

Inst. Owners, % Active 99.9%

Source: Refinitiv, Morgan Stanley Research

MS ESTIMATES VS. CONSENSUS

FY Dec 2022e



◆ Mean ◆ Morgan Stanley Estimates

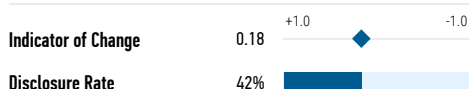
Source: Refinitiv, Morgan Stanley Research

MS ALPHA MODELS

4/5 MOST 3 Month Horizon

Source: Refinitiv, FactSet, Morgan Stanley Research; 1 is the highest favored Quintile and 5 is the least favored Quintile

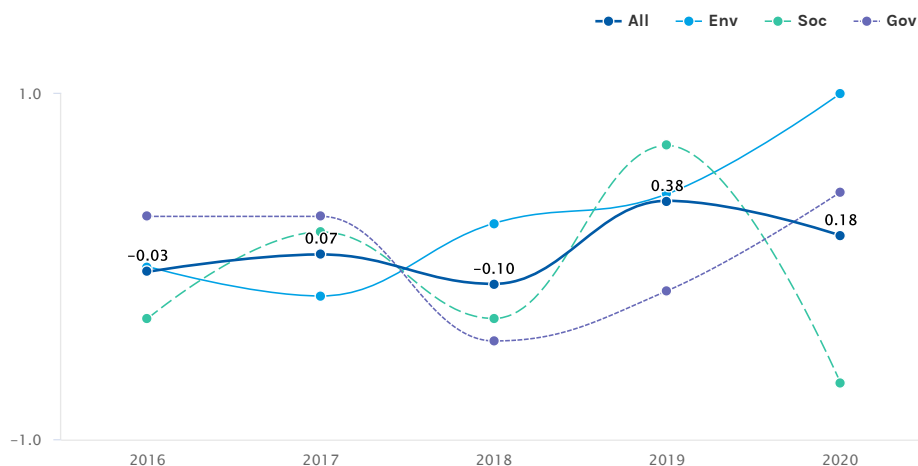
SUSTAINABILITY & ESG



Risk Reward – PTT Public Company (PTT.BK)

SUSTAINABILITY AND ESG

INDICATOR OF CHANGE OVER TIME



Environment	Unit	Dec '18	Dec '19	Dec '20
CO2 emissions (Scope 1 and 2)	Million tonnes CO2 equivalent	30.68	31.03	30.22
Energy consumption	Gigajoules	314,737,645	309,966,042	-
Total waste	million tonnes	0.02	0.01	-
Volume of accidental spills	cubic metre	0.00	0.00	-
Waste recycled	Percentage	7.99%	8.82%	-
Water consumption	Million cubic meters	2,210	1,926	-
Water recycled	Percentage	7.17%	7.32%	7.58%
Social				
Avg training hrs per employee	Hours	73.68	72.62	31.19
Employee engagement	Percentage	71.00%	78.00%	80.00%
Employee turnover	Percentage	1.69%	1.23%	6.00%
Fatalities		1	0	-
Lost time injury rate	Injuries per 200,000 hours worked	0.06	0.03	0.21
Governance				
Avg tenure of the board	Years	2.37	2.40	2.36
Female board members	Percentage	7.14%	6.67%	13.33%
Independent board members	Percentage	78.57%	66.67%	73.33%
Shares owned by board members	Percentage	0.00%	0.00%	0.00%

Indicator of change chart is plotted using the fiscal aligned methodology. View explanation of 'Indicator of Change' methodology [here](#)

Source: Company Data, Morgan Stanley Research

SUMMARY

- PTT is integrating its sustainability targets into business goals across the entire PTT group. The Group makes significant disclosures across environmental, social and governmental parameters
- PTT has a long-term goal to reduce greenhouse gas emissions by 20% by 2030, in addition to targets for reducing water and resource consumption and waste disposal
- PTT Group has taken a lead role in the country's previous energy transitions, first with natural gas followed by biofuels. PTT is playing a key role in raising share of natural gas in Thailand's overall energy mix
- PTT has committed to spend ~20% of its proposed 2021-2030 investment plan into New Energy (renewables, EVs, energy storage and smart solutions) and New Life Science segments (Nutrition, pharmaceutical and medical devices)
- In addition PTT has started evaluating and integrating carbon pricing into investment decision making in 2020

SUSTAINABLE SOLUTIONS

Theme	Exposure
Waste Management	1% (EBITA)

Exposure is presented for top four Sustainability themes
View explanation of Theme/Exposure methodology [here](#)

Valuation Comparables

Exhibit 15: Global Upstream Peer Comparables

Company Name	Market cap, current, USD (MM)	Price to Earnings		EV/EBITDA		P/BV		ROE		Dividend yield		Net Debt/Equity	
		2023	2024	2023	2024	2023	2024	2023	2024	2023	2024	2023	2024
Asian E&P Large Cap Companies													
CNOOC	70,304.26	4.0 e	5.4 e	1.5 e	1.7 e	0.8 e	0.7 e	21.3% e	14.1% e	10.7% e	7.9% e	(18.5%) e	(18.5%) e
Oil & Natural Gas Corp.	24,365.82	3.5 e	3.5 e	2.6 e	2.3 e	0.6 e	0.6 e	19.7% e	17.7% e	11.2% e	11.3% e	7.7% e	(4.2%) e
Woodside Energy	48,051.51	11.3 e	10.5 e	4.0 e	3.7 e	1.3 e	1.2 e	11.3% e	12.1% e	8.2% e	7.5% e	(0.6%) e	(4.9%) e
SK Innovation Co Ltd	12,605.76	6.4 e	5.4 e	4.5 e	3.8 e	0.7 e	0.6 e	12.5% e	13.0% e	0.0% e	0.0% e	59.0% e	53.4% e
Santos	15,985.31	7.0 e	8.1 e	3.3 e	3.7 e	0.9 e	0.9 e	14.1% e	11.4% e	7.3% e	7.1% e	4.2% e	4.1% e
Oil India Limited	3,486.35	3.3 e	4.1 e	3.4 e	4.0 e	0.6 e	0.6 e	22.2% e	15.8% e	10.2% e	8.9% e	58.3% e	51.2% e
INPEX	15,712.36	5.2 e	4.8 e	1.3 e	1.0 e	0.5 e	0.5 e	11.1% e	11.2% e	5.6% e	6.0% e	(22.6%) e	(27.4%) e
Japan Petroleum Exploration	2,089.54	5.8 e	5.7 e	1.5 e	1.2 e	0.6 e	0.6 e	11.4% e	11.0% e	6.6% e	6.8% e	(44.7%) e	(46.6%) e
Asia Avg- Large Cap		5.9	6.2	3.2	3.2	0.8	0.8	16.8%	14.0%	7.9%	7.1%	18.3% e	13.5% e
Asian E&P Mid & Small Cap Companies													
Beach Energy Ltd	2,202.22	7.2 e	6.0 e	3.0 e	2.6 e	0.8 e	0.7 e	12.7% e	13.9% e	2.1% e	1.4% e	(1.4%) e	(2.1%) e
PTT Exploration & Production	17,731.37	8.3 e	10.8 e	3.0 e	3.3 e	1.3 e	1.3 e	17.4% e	12.2% e	6.0% e	4.6% e	(3.0%) e	(10.1%) e
Asia Avg- Mid & Small Cap		7.8	8.4	3.0	2.9	1.1	1.0	15.1%	13.1%	4.1%	3.0%	(2.2%) e	(6.1%) e
European E&P Companies													
BP	118,570.02	6.4 e	6.4 e	3.3 e	3.2 e	1.5 e	1.3 e	26.2% e	22.8% e	4.2% e	4.7% e	37.9% e	26.6% e
Royal Dutch Shell	216,297.24	7.7 e	8.5 e	3.8 e	3.8 e	1.0 e	1.0 e	14.2% e	11.8% e	4.0% e	4.4% e	14.9% e	12.4% e
ENI	51,186.88	5.7 e	6.4 e	2.1 e	2.1 e	0.8 e	0.7 e	14.3% e	11.6% e	6.4% e	6.6% e	14.6% e	10.5% e
Total	154,961.78	6.8 e	8.1 e	2.8 e	3.0 e	1.3 e	1.2 e	20.0% e	15.1% e	4.8% e	5.0% e	9.1% e	7.7% e
Repsol	22,679.60	4.7 e	5.1 e	2.5 e	2.6 e	0.6 e	0.5 e	14.5% e	11.6% e	5.3% e	6.0% e	4.1% e	2.1% e
Europe Average		6.3	6.9	2.9	2.9	1.0	0.9	18%	15%	5%	5%	17.9% e	12.9% e
US E&P Companies													
Exxon Mobil	454,362.63	11.1 e	12.1 e	5.1 e	5.2 e	2.2 e	2.1 e	21.2% e	17.9% e	3.3% e	3.4% e	(18.2%) e	(21.0%) e
Chevron	312,751.74	10.0 e	10.2 e	4.4 e	4.3 e	1.8 e	1.7 e	19.0% e	17.4% e	3.7% e	3.9% e	(27.9%) e	(30.7%) e
Conoco Phillips	131,201.29	9.0 e	9.3 e	4.3 e	4.2 e	2.4 e	2.1 e	29.6% e	24.7% e	2.0% e	2.1% e	7.0% e	(1.5%) e
EOG Resources Inc	69,504.20	8.1 e	9.3 e	4.5 e	4.9 e	2.4 e	2.3 e	34.7% e	25.4% e	2.8% e	2.9% e	(10.8%) e	(11.5%) e
Devon Energy Corp	35,989.62	6.6 e	6.7 e	4.4 e	4.4 e	2.7 e	2.3 e	48.4% e	39.2% e	1.4% e	1.5% e	36.5% e	26.0% e
Pioneer Natural Resources Co.	48,488.41	8.4 e	8.5 e	3.8 e	3.6 e	1.5 e	1.4 e	25.9% e	23.7% e	2.1% e	2.2% e	11.5% e	7.6% e
Range Resources Corp.	6,566.44	7.5 e	5.7 e	5.8 e	4.7 e	2.0 e	1.7 e	31.4% e	31.8% e	1.5% e	1.7% e	57.5% e	41.6% e
Southwestern Energy Co	5,917.63	3.4 e	2.2 e	4.4 e	3.0 e	1.6 e	1.0 e	91.9% e	72.3% e	0.0% e	0.0% e	125.6% e	56.0% e
Occidental Petroleum Corp	54,769.41	8.5 e	8.3 e	4.9 e	4.6 e	2.5 e	2.1 e	30.9% e	26.8% e	1.2% e	1.5% e	127.9% e	101.1% e
US Average		8.1	8.0	4.6	4.3	2.1	1.8	37.0%	31.0%	2.0%	2.1%	34.3% e	18.6% e
Average E&P (All Companies)		7.0	7.4	3.4	3.4	1.3	1.1	21.7%	18.2%	4.7%	4.4%	17.1% e	9.7% e

*Indicates non-covered companies, based on Refinitiv estimates
Source: Refinitiv, Morgan Stanley research estimates, Pricing as on 7th March, 2023

Exhibit 16: Global Integrated Peer Comparables

Company Name	Market cap, current, USD (MM)	Price to Earnings		EV/EBITDA		P/BV		ROE		Dividend yield		Net Debt/Equity	
		2023	2024	2023	2024	2023	2024	2023	2024	2023	2024	2023	2024
Asian Integrated Companies													
Reliance Industries	194,043.84	19.3 e	18.5 e	9.7 e	8.8 e	1.8 e	1.7 e	10.1% e	9.7% e	0.6% e	0.7% e	(13.7%) e	(9.5%) e
PetroChina	12,095.53	4.3 e	4.1 e	2.7 e	2.6 e	0.5 e	0.4 e	11.5% e	11.3% e	10.5% e	11.0% e	6.2% e	2.6% e
China Petro.& Chem. Corp.	14,806.18	8.9 e	8.3 e	1.7 e	1.7 e	0.5 e	0.5 e	6.3% e	6.6% e	6.8% e	7.3% e	21.5% e	25.2% e
PTT Public Company	26,301.48	7.2 e	7.3 e	4.8 e	4.8 e	0.9 e	0.8 e	12.6% e	11.8% e	6.9% e	6.9% e	53.2% e	38.6% e
Origin Energy Ltd.	9,398.60	37.1 e	28.6 e	5.7 e	5.0 e	1.4 e	1.4 e	3.2% e	4.9% e	5.5% e	3.1% e	27.4% e	22.8% e
Asia Average		15.4	13.3	4.9	4.6	1.0	1.0	8.7%	8.9%	6.1%	5.8%	19%	16%
European Integrated Companies													
Equinor ASA	95,285.78	7.3 e	8.3 e	1.5 e	1.6 e	1.9 e	2.0 e	23.9% e	21.8% e	11.7% e	10.0% e	(15.8%) e	(2.3%) e
BP plc	118,570.02	6.4 e	6.4 e	3.3 e	3.2 e	1.5 e	1.3 e	26.2% e	22.8% e	4.2% e	4.7% e	37.9% e	26.6% e
Royal Dutch Shell	216,297.24	7.7 e	8.5 e	3.8 e	3.8 e	1.0 e	1.0 e	14.2% e	11.8% e	4.0% e	4.4% e	14.9% e	12.4% e
TOTAL	154,961.78	6.8 e	8.1 e	2.8 e	3.0 e	1.3 e	1.2 e	20.0% e	15.1% e	4.8% e	5.0% e	9.1% e	7.7% e
Eni SpA	51,186.88	5.7 e	6.4 e	2.1 e	2.1 e	0.8 e	0.7 e	14.3% e	11.6% e	6.4% e	6.6% e	14.6% e	10.5% e
Repsol	22,679.60	4.7 e	5.1 e	2.5 e	2.6 e	0.6 e	0.5 e	14.5% e	11.6% e	5.3% e	6.0% e	4.1% e	2.1% e
Europe Average		6.4	7.2	2.7	2.7	1.2	1.1	18.8%	15.8%	6.1%	6.1%	11%	10%
NA Integrated Companies													
Canadian Natural Resources Ltd	63,929.12	7.7 e	7.2 e	4.6 e	4.2 e	1.9 e	1.8 e	26.8% e	25.4% e	4.6% e	5.0% e	17.3% e	17.8% e
Imperial Oil Ltd	29,702.54	6.6 e	7.3 e	4.1 e	4.0 e	1.5 e	1.3 e	27.0% e	20.4% e	2.6% e	2.7% e	0.4% e	(9.1%) e
Cenovus Energy Inc	35,568.61	5.9 e	6.0 e	3.9 e	4.3 e	1.5 e	1.3 e	26.9% e	22.1% e	2.3% e	2.8% e	27.9% e	29.1% e
Chevron Corporation	312,751.74	10.0 e	10.2 e	4.4 e	4.3 e	1.8 e	1.7 e	19.0% e	17.4% e	3.7% e	3.9% e	(27.9%) e	(30.7%) e
Conoco Phillips	131,201.29	9.0 e	9.3 e	4.3 e	4.2 e	2.4 e	2.1 e	29.6% e	24.7% e	2.0% e	2.1% e	7.0% e	(1.5%) e
Exxon Mobil Corporation	454,362.63	11.1 e	12.1 e	5.1 e	5.2 e	2.2 e	2.1 e	21.2% e	17.9% e	3.3% e	3.4% e	(18.2%) e	(21.0%) e
Suncor Energy Inc	45,516.78	6.1 e	6.5 e	3.0 e	2.9 e	1.4 e	1.2 e	24.1% e	19.9% e	5.3% e	5.8% e	21.1% e	18.1% e
NA Average		8.1	8.4	4.2	4.2	1.8	1.7	24.9%	21.1%	3.4%	3.7%	4%	0%
Petrobras	40,857.85	3.0 e	3.2 e	1.9 e	1.8 e	0.8 e	0.7 e	31.3% e	24.9% e	10.7% e	10.2% e	24.8% e	14.3% e
Average Integrated (All Companies)		10.0	9.6	3.9	3.8	1.3	1.2	17.5%	15.3%	5.2%	5.2%	11%	9%

*Indicates non-covered companies, based on Refinitiv estimates
 Source: Refinitiv, Morgan Stanley research estimates, Pricing as on 7th March, 2023

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Global Stock Ratings Distribution

(as of February 28, 2023)

The Stock Ratings described below apply to Morgan Stanley's Fundamental Equity Research and do not apply to Debt Research produced by the Firm. For disclosure purposes only (in accordance with FINRA requirements), we include the category headings of Buy, Hold, and Sell alongside our ratings of Overweight, Equal-weight, Not-Rated and Underweight. Morgan Stanley does not assign ratings of Buy, Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold, and sell but represent recommended relative weightings (see definitions below). To satisfy regulatory requirements, we correspond Overweight, our most positive stock rating, with a buy recommendation; we correspond Equal-weight and Not-Rated to hold and Underweight to sell recommendations, respectively.

STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MISC
Overweight/Buy	1353	37%	284	43%	21%	593	38%
Equal-weight/Hold	1664	45%	294	45%	18%	732	47%
Not-Rated/Hold	4	0%	0	0%	0%	0	0%
Underweight/Sell	660	18%	80	12%	12%	232	15%
TOTAL	3,681		658			1557	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

Analyst Stock Ratings

Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Underweight (U). The stock's total return is expected to be below the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

Analyst Industry Views

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

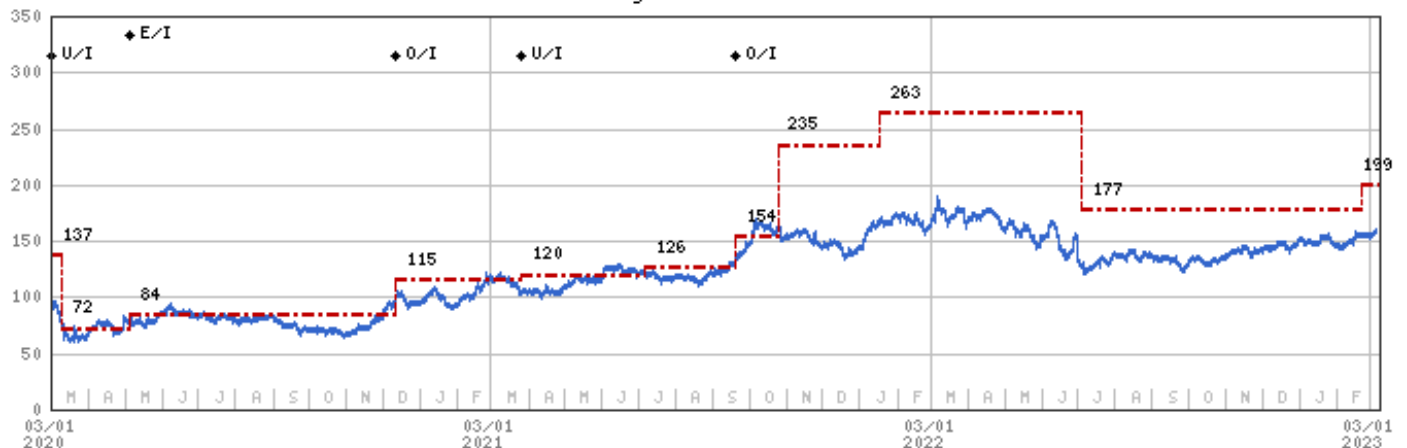
In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.

Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

Stock Price, Price Target and Rating History (See Rating Definitions)

Oil & Natural Gas Corp. (ONGC.NS) - As of 3/7/23 in INR
Industry : India Oil & Gas



Stock Rating History: 3/1/18 : U/A; 10/5/18 : U/C; 12/10/18 : E/I; 6/6/19 : U/I; 5/5/20 : E/I; 12/11/20 : O/I; 3/26/21 : U/I; 9/20/21 : O/I

Price Target History: 2/12/18 : 199; 10/5/18 : 147; 12/10/18 : 146; 6/6/19 : 159; 11/18/19 : 137; 3/9/20 : 72; 5/5/20 : 84; 12/11/20 : 115; 3/26/21 : 120; 7/7/21 : 126; 9/20/21 : 154; 10/25/21 : 235; 1/18/22 : 263; 7/4/22 : 177; 2/21/23 : 199

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target --- No Price Target Assigned (NA)
 Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ■
 Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View
 Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
 Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.

Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

PetroChina (601857.SS) - As of 3/7/23 in CNY
Industry : China Energy & Chemicals



Stock Rating History: 3/1/18 : U/A; 8/1/19 : U/I; 9/30/20 : U/A; 3/17/21 : U/A; 8/18/22 : U/I

Price Target History: 2/22/18 : 5.15; 5/17/18 : 6.46; 10/23/18 : 7.12; 11/15/18 : 5.76; 1/10/19 : 5.18; 8/1/19 : 4.6; 1/7/20 : 4.1; 2/28/20 : 3.21; 3/20/20 : 2.26; 4/6/20 : 2.55; 6/2/20 : 2.43; 7/24/20 : 3.15; 10/22/20 : 2.27; 12/30/20 : 2.33; 3/17/21 : 3.42; 5/19/21 : 3.58; 9/3/21 : 3.85; 10/8/21 : 4.42; 2/14/22 : 4.55; 3/3/22 : 4.63; 11/8/22 : 4.05; 2/16/23 : 4.95

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target --- No Price Target Assigned (NA)
 Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ■
 Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View
 Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
 Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.

Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

PetroChina (0857.HK) - As of 3/7/23 in HKD
Industry : China Energy & Chemicals

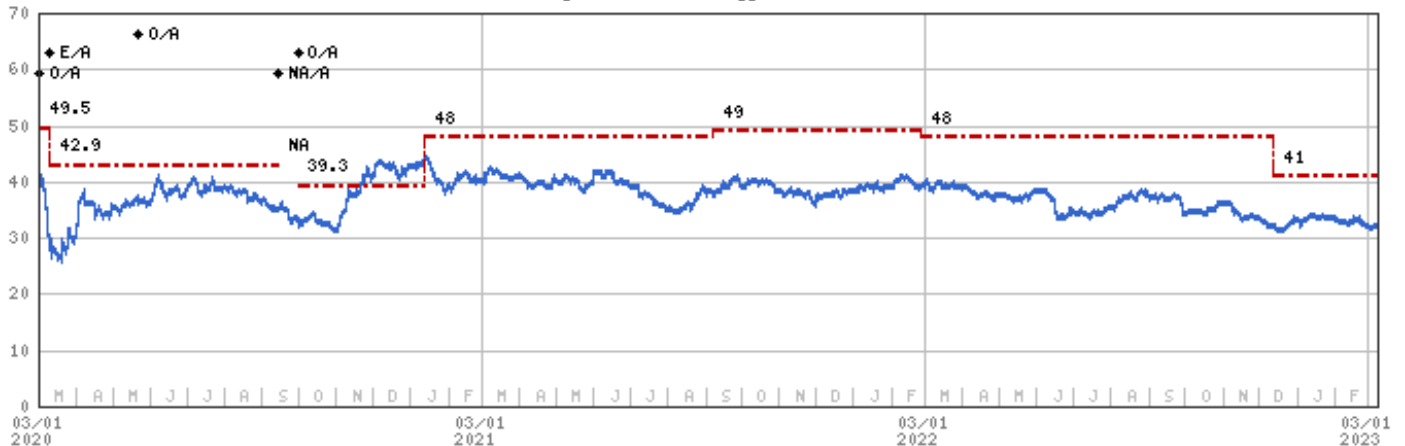


Stock Rating History: 3/1/18 : O/A; 11/15/18 : E/A; 1/10/19 : O/A; 8/1/19 : O/I; 2/28/20 : E/I; 7/24/20 : O/I; 9/30/20 : O/A; 3/17/21 : O/A; 8/18/22 : O/I
 Price Target History: 2/22/18 : 6.36; 5/17/18 : 7.97; 10/23/18 : 8.07; 11/15/18 : 6.46; 1/10/19 : 5.89; 8/1/19 : 5.21; 1/7/20 : 4.64; 2/28/20 : 3.63; 3/20/20 : 2.49; 4/6/20 : 2.82; 6/2/20 : 2.67; 7/24/20 : 3.5; 10/22/20 : 2.61; 12/30/20 : 2.78; 3/17/21 : 4.13; 5/12/21 : 4.35; 9/3/21 : 4.65; 10/8/21 : 5.33; 2/14/22 : 5.58; 3/3/22 : 5.68; 11/8/22 : 4.38; 2/16/23 : 5.5

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target --- No Price Target Assigned (NA)
 Stock Price (Not Covered by Current Analyst) --- Stock Price (Covered by Current Analyst) ---
 Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View
 Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
 Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.
 Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

PTT Public Company (PTT.BK) - As of 3/7/23 in THB
Industry : ASEAN Energy and Materials



Stock Rating History: 3/1/18 : O/A; 3/9/20 : E/A; 5/22/20 : O/A; 9/14/20 : NA/A; 9/30/20 : O/A
 Price Target History: 1/8/18 : 52.4; 6/27/18 : 57; 10/17/18 : 61.8; 6/17/19 : 54; 9/30/19 : 52.6; 2/4/20 : 49.5; 3/9/20 : 42.9; 9/14/20 : NA; 9/30/20 : 39.3; 1/12/21 : 48; 9/7/21 : 49; 2/25/22 : 48; 12/12/22 : 41

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target --- No Price Target Assigned (NA)
 Stock Price (Not Covered by Current Analyst) --- Stock Price (Covered by Current Analyst) ---
 Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View
 Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
 Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.
 Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

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INDUSTRY COVERAGE: ASEAN Energy and Materials

COMPANY (TICKER)	RATING (AS OF)	PRICE* (03/08/2023)
Mayank Maheshwari		
Adaro Energy Tbk PT (ADRO.JK)	E (05/04/2022)	Rp2,920
Esso (Thailand) Plc. (ESSO.BK)	U (01/08/2018)	Bt9.10
Indocement Tunggak Prakarsa Tbk PT (INTP.JK)	E (01/11/2023)	Rp11,475
Indorama Ventures PCL (IVL.BK)	O (01/06/2023)	Bt35.50
IRPC PCL (IRPC.BK)	E (09/07/2021)	Bt2.88
Keppel Corporation Ltd (KPLM.SI)	E (03/02/2023)	S\$5.46
Petronas Chemicals Group Berhad (PCGB.KL)	O (03/04/2020)	RM7.22
PTT Exploration & Production (PTTEP.BK)	E (02/21/2023)	Bt151.00
PTT Global Chemicals (PTTGC.BK)	O (02/19/2019)	Bt48.25
PTT Oil and Retail Business PCL (OR.BK)	O (02/21/2023)	Bt21.10
PTT Public Company (PTT.BK)	O (09/30/2020)	Bt31.50
SCG Packaging PCL (SCGP.BK)	O (11/26/2020)	Bt52.75
SembCorp Marine Ltd (SCMN.SI)		S\$0.11
Semen Indonesia (Persero) Tbk PT (SMGR.JK)	E (01/11/2023)	Rp6,900
Siam Cement (SCC.BK)	++	Bt331.00
Siam City Cement PCL (SCCC.BK)	U (03/17/2022)	Bt145.00
Star Petroleum Refining (SPRC.BK)	O (12/19/2018)	Bt11.20
Thai Oil Public Company (TOP.BK)	O (08/15/2022)	Bt52.25
United Tractors Tbk PT (UNTR.JK)	O (03/31/2020)	Rp26,400

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* Historical prices are not split adjusted.