



Asian Insights SparX

# Environmental, Social and Governance

Refer to important disclosures at the end of this report

DBS Group Research . Equity

17 Jul 2020

## Turning carbon into gold

- Thai oil & gas exploration companies have better climate-related disclosures than peers within our coverage in Asia
- We estimate that most energy stocks will suffer <4% decline in profit in 2030 for every US\$1/tCO<sub>2e</sub> of carbon tax; earnings CAGR during 2020-30 projected to drop by 1-3ppts assuming governments take more actions to reduce carbon emissions
- Prefer stocks with improving climate-related financial disclosure and less financial risk; top picks: Adaro Energy (ADRO IJ), CNOOC (883 HK), Thai Oil PCL (TOP TB), and Xinjiang Goldwind (2208 HK)

HSI: 25,478

JCI: 5.079

SET: 1,341

KLCI: 1,599

### Recommendation & valuation

Company Name	Price		Recom	Mkt Cap US\$m	PE 20F x
	Local\$	Local\$			
Adaro Energy (ADRO IJ)	1,155	1,400	BUY	2,538	8.7
CNOOC (883 HK)	8.72	12.00	BUY	50,219	37.3
Thai Oil PCL (TOP TB)	42.25	54.00	BUY	2,729	90.2
Xinjiang Goldwind (2208 HK)	7.16	10.00	BUY	6,275	6.5

Source: Thomson Reuters, DBS Bank (Hong Kong) Limited ("DBS HK")

\* Closing as of 14 July 2020



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## Investment summary

DBS is issuing a series of reports to discuss climate change risk, particularly transition risk, on the main carbon emission sectors. This report is the first in the series and we focus on 29 stocks under our coverage in the oil & gas exploration, coal mining and power generation sectors in China / Hong Kong, Indonesia, Malaysia and Thailand.

For oil & gas exploration, coal mining and power generation companies, the major impacts include **potential downside risk on revenue and decline in asset values of carbon emitting assets** due to greater demand for green energy, **higher operating costs** (due to tightening of regulations and emission levels), **shortage of resources** (such as water scarcity) and **legal liabilities** for damaging effects of climate change. Potential opportunities include reduction of energy consumption through energy efficiency improvements, development of new green products, expansion into renewable energy, etc.

We have done a scenario analysis to assess the possible impact of the above climate-related issues on 2020-30 CAGR of turnover and earnings for (i) a base case (where national policies and plans are currently being implemented for carbon reduction) and (ii) a sustainable case (where governments step up their efforts to encourage companies to take action to reduce carbon emissions for a sustainable development). **We estimate most of our covered companies would see a 1-3ppts drop in earnings CAGR for the sustainable case vs base case.** For oil & gas exploration companies under our coverage, our analysis suggests that Sinopec Shanghai Petrochemical (338 HK), Perusahaan Gas (PGAS IJ) and Thai Oil PCL (TOP TB) are the most resilient to tightening carbon emissions standards with the smallest difference in earnings CAGR in 2020-2030 between the two scenarios. For coal mining and conventional power generation companies, Indo Tambangraya Megah (ITMG IJ) and Tenaga (TNB MK) are the most resilient respectively.

We have also conducted a sensitivity analysis on earnings for every US\$1 per ton of carbon dioxide equivalent (tCO<sub>2</sub>e) of carbon tax, assuming that there is no cost pass-through to end customers. **We reckon that most companies under our coverage have an earnings sensitivity of less than 4% in 2030.** CNOOC (883 HK), PTT Exploration and Production (PTTEP TB), Medco Energi (MEDC IJ) and Bangchak Corp. (BCP TB) have the lowest sensitivity to carbon tax due to their higher profitability. Apart from renewable energy plays, Power Assets (6 HK) and Global Power Synergy (GPSC TB) have the lowest sensitivity to carbon tax, due to their higher percentage of low-carbon intensity power generation capacity and relatively high profit margins.

In terms of transparency in climate-related financial disclosure, we made an assessment based on management quality and carbon intensity. **We reckon that around 30% of our covered universe in the oil & gas exploration and power generation sectors showed consistent downtrend in carbon intensity in the past three years, albeit marginal.** Most of them had a carbon intensity score above the sector mean.

Based on our analysis, **oil & gas exploration companies in Thailand show the best management quality** in terms of climate-related financial disclosure. Their outperformance is due to their quantitative targets to reduce greenhouse gas emissions and disclosure in scope 3 emissions, i.e. indirect emissions (excluding those from the generation of purchased energy) that occur in the value chain, including both upstream and downstream emissions.

We like those companies with strong commitment and the right strategy to adapt to society's increasing concern on climate change, as well as relatively lower financial risk during the transition to a green economy. **Our top picks are Adaro Energy (ADRO IJ), CNOOC (883 HK), Thai Oil PCL (TOP TB) and Xinjiang Goldwind (2208 HK).**

### Rising carbon emissions mainly in developing countries

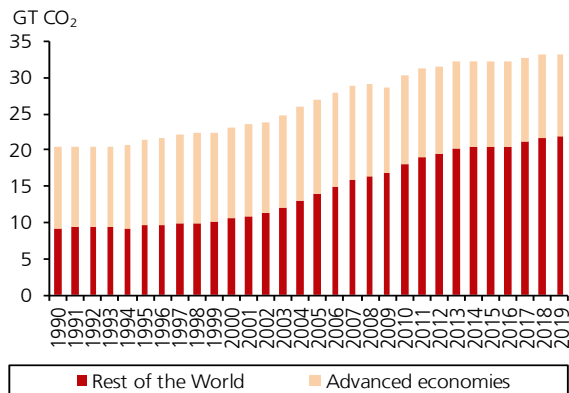
Since 1751, the world has emitted over 1.5tn tonnes of carbon dioxide (CO<sub>2</sub>). In 2019, carbon emissions exceeded 33 gigatonnes (GT), up from 20GT in 1990. China, the largest emitter, accounted for more than 25% of the total, followed by the US (15%), India (7%) and Russia (5%). Due to COVID-19, lower energy demand caused carbon emissions to decline. According to data from Nature Climate Change, daily emissions declined 17% y-o-y at the peak of the global confinements in 1Q2020. The International Energy Agency estimated that global emissions will decline by around 8% y-o-y in 2020. But this does not solve the emissions problem.

### Carbon emissions per capita going down in the West but rising in Asia Pacific

Despite the first global climate treaty signed at the Rio Earth Summit in 1992 and increasing awareness on climate change, global carbon emissions continues to trend up. The increase mainly comes from developing countries in Asia.

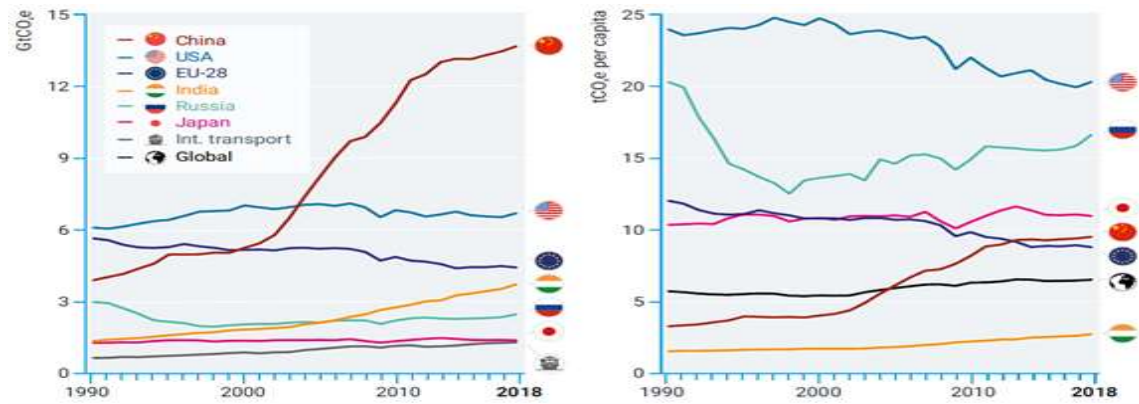
There is a strong positive relationship between income and carbon emissions per capita, i.e. higher income countries also have higher carbon emissions per capita. Thanks to a shift in energy sources from fossil fuels to renewable energy, carbon emissions per capita in most of the Western countries is on a downtrend. Carbon emissions per capita in the Asia Pacific, on the other hand, is climbing, on the back of growing energy demand for development. Fossil fuels is the dominant energy source.

### Global carbon emissions



Source: International Energy Agency

### Top greenhouse gas emitters (2018)



Source: United Nations Environment Programme Emission Gap Report 2019

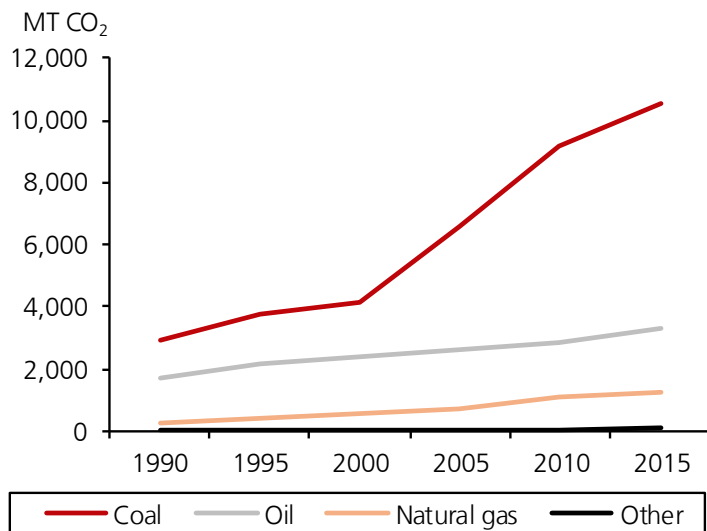
**Power generation is the largest emitter in Asia Pacific**

In Europe and the US, power generation and transportation are the major contributors to carbon emissions, each sector accounting for at least 25% of total emissions. In Canada, transportation sector emits more carbon than power generators. However, in Asia Pacific, with steady growth in economies and continuous urbanisation, power generation is the major carbon emission contributor (around 50% of total emissions), followed by industrial and transportation sectors.

The largest sources of emissions are different in the Asia Pacific and the Western world. In Europe and the US, coal, oil and natural gas each contribute around 25-30% of carbon emissions while oil and natural gas each account for 40-50% in Canada. However, in Asia Pacific, the share of carbon emissions is much larger at 70% of the total as coal remains the most economical energy source.

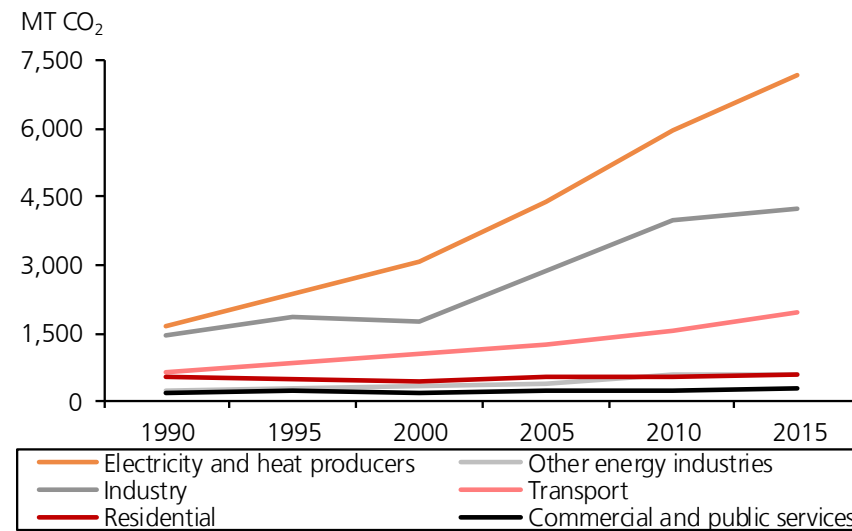
DBS is issuing a series of reports to discuss climate change risk on the main carbon emitting sectors. In this report, we focus on 29 stocks under our coverage in the oil & gas exploration, coal mining and power generation segments.

**Carbon emissions in Asia Pacific – by source**



Source: International Energy Agency

**Carbon emissions in Asia Pacific – by sector**



Source: International Energy Agency

### Carbon emission targets to be strengthened

As of November 2019, 187 parties have ratified the Paris Agreement and pledged to control greenhouse gas (GHG) emissions to limit global warming to 2 degrees Celsius by 2100 from pre-industrial levels. They have also submitted intended nationally determined contributions (NDCs) which represent each country's self-defined mitigation goals for the period beginning 2020.

#### Carbon emission reduction targets

Country	2020	2030
China	Carbon intensity 40-50% below 2005 levels	Carbon intensity 60-65% below 2005 levels
Indonesia	GHG emissions 26% below business as usual	GHG emissions 29% below business as usual
Malaysia	Carbon intensity 40% below 2005 levels	Carbon intensity 45% below 2005 levels
Thailand	GHG emissions 7-20% below business as usual	GHG emissions 20% below business as usual

Source: Climate Action Tracker, Climate Policy tracker, DBS

However, the United Nations Environment Programme Emission Gap Report 2019 suggested that based on the above NDCs submitted by countries, if fully implemented, could result in warming of 3.2 degrees Celsius, and therefore not ambitious enough to achieve the 2-degree goal. Thus, carbon emission targets are expected to be strengthened when NDCs are next updated.

In addition, a recent study<sup>^</sup> showed that the difference between the impact of national policies and the NDCs is also a contributing factor in missing the 2-degree goal. Thus, all countries would need to step up their current policies and accelerate the implementation of renewable technologies with improved efficiency.

<sup>^</sup> Reference:

"Taking stock of national climate policies to evaluate implementation of the Paris Agreement" by Roelfsema, M., van Soest, H.L., Harmsen, M. et al. (2020)

## How will climate change impact businesses?

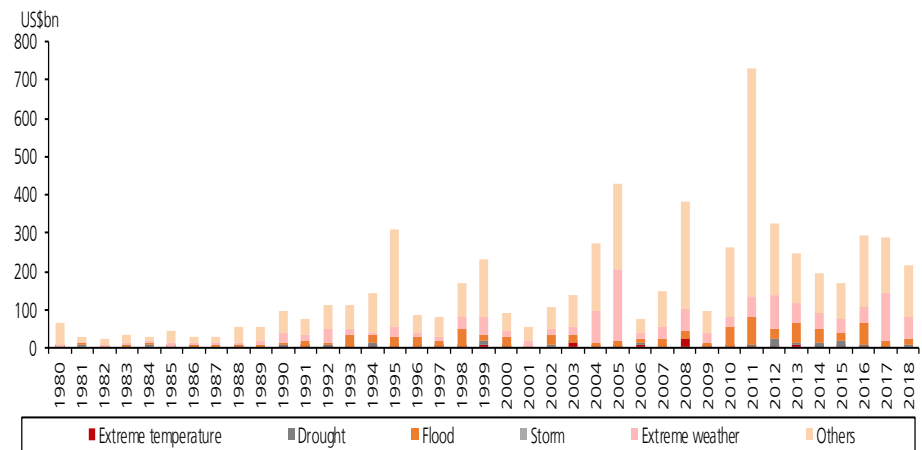
### Both risks and opportunities from climate change

A changing climate brings about a range of potential ecological, physical and health impacts, including floods, droughts, storms, sea-level rises and altered crop growth, putting lives, livelihoods and economic growth at risk. Information from Our World in Data shows a clear uptrend in economic losses from natural disasters. The major cause of climate change is the extensive burning of fossil fuels. This point of view is supported by a vast number of scientific research\*\* sources. There is also an increasing awareness on climate change and stronger outcry for decarbonisation from the general public. An estimated six million people in more than 180 countries protested on the streets during 20-27 September last year demanding for more action to cut greenhouse emissions, the same week that the United Nations Climate Action Summit was held.

For oil & gas exploration and power generation companies, demand for greener energy has a direct impact on their existing high-carbon intensity operations. Hence there is potential downside risk on revenue, which will in turn lead to a decline in values of its carbon emitting assets. In addition, tightening of regulations and emission levels means higher operating costs either through switching to lower carbon intensity fuel or installation of carbon capture technology. Potential risk from shortage of resources, such as water scarcity, could negatively affect production, hence turnover. There is also an increasing number of legal cases against fossil fuel and utility companies in recent years due to the damaging effects of climate change.

Meanwhile, there are opportunities arising from climate change as well. For example, companies can explore ways to reduce energy consumption through energy efficiency improvements, development of new green products, expansion into renewable energy, etc. Thus, climate change could have both negative and positive changes on turnover and operating cost of a company.

### Economic losses from natural disasters



Source: Our World in Data

\*\* References:

"Turn Down the Heat" reports by the Potsdam Institute for Climate Impact Research

Assessment reports on climate change by The Intergovernmental Panel on Climate Change

"The Scientific Consensus on Climate Change" by Naomi Oreskes (2005)

"Greenhouse-gas emission targets for limiting global warming to 2°C" by M. Meinshausen (2009)

"Global Climate Change Impacts in the United States" by United States Global Change Research Program (2009)

**Demand for oil and gas still increases despite tightening carbon emission targets**

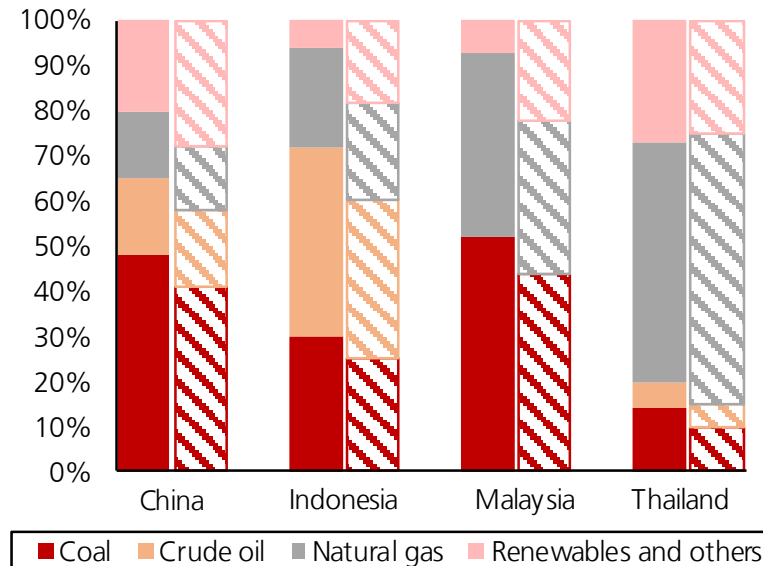
Even though countries are expected to raise their carbon emission reduction targets further, we expect demand for oil and gas will remain on an uptrend, particularly in developing countries, including China, Indonesia, Malaysia and Thailand. A 2019 McKinsey report predicts that strong demand for plastics, particularly from emerging economies, will continue to support global oil demand until 2035 despite declining consumption from power generation and transportation sectors. It further predicted that natural gas is the only fossil fuel to grow its share of global energy demand before plateauing after 2035.

Although the global demand for coal is expected to remain flat, International Energy Agency expects demand for coal in South East Asia to climb by >50% from 2018 to 2030. We believe that oil, gas and coal remain the major energy sources in Asia, despite that policy makers would have to tighten the carbon emission standard for sustainable development.

We have done a scenario analysis to assess the risk on revenue and earnings by 2030: a base case (where current national policies and plans are being implemented for carbon reduction) and a sustainable case (where governments step up their efforts to encourage companies to take action to reduce carbon emissions for a sustainable development). We reckon most of our covered companies would see 1-3ppts drop in earnings CAGR during 2020-30 between the two scenarios.

In the base case, we have assumed: (a) long term crude oil price of US\$45-55 per barrel (bbl) and coal price sustainable at US\$70/ton; (b) output CAGR of 2-3% for most oil & gas exploration companies in the coming 10 years; (c) coal demand staying flat for coal mining companies in the coming 10 years; and (d) higher operating costs due to R&D in new products/services or investments for carbon reduction, etc.

**Estimated primary energy mix \***



Source: China National Petroleum Corporation's Economics & Technology Research Institute, Indonesia Ministry of Energy and Mineral Resources, Energy Policy and Planning Office of Thailand, DBS  
 \* Solid colour: base case; Pattern: sustainable case

In the sustainable case, we have assumed (a) long term crude oil price of US\$40-45/bbl with coal prices falling to US\$60/ton; (b) output CAGR of 1-2% for most oil & gas exploration companies during the period; (c) output of coal mining companies to drop marginally each year in the coming 10 years; (d) more aggressive steps to diversify revenue; (e) decline in gross margin from the base case mainly due to overcapacity in refinery and lower selling prices; and (f) no carbon tax imposed.

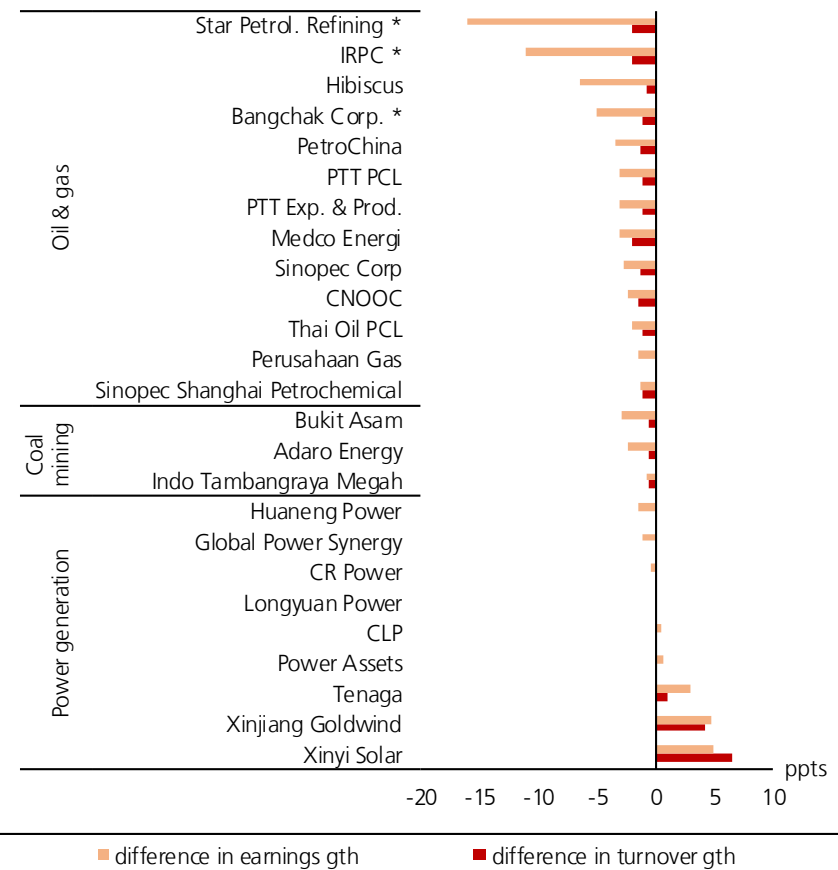


**Environmental, Social and Governance**

For oil & gas exploration companies under our coverage, we estimate that Sinopec Shanghai Petrochemical (338 HK), Perusahaan Gas (PGAS IJ) and Thai Oil PCL (TOP TB) are the most resilient to tightening carbon emission standards with the smallest difference in earnings CAGR during 2020-2030 between two cases. For coal mining companies under our coverage, Indo Tambangraya Megah (ITMG IJ) is the most resilient.

With more installations of renewable power systems, renewable energy companies are the obvious beneficiaries of climate-related issues with the strongest increase in earnings CAGR during 2020-2030 between two cases. For conventional power generation companies, we expect minimum negative impact on demand for electricity from climate change in both cases. The drivers for the difference in earnings CAGR are faster progress in installation of renewable energy systems and higher interest expenses due to higher capex in the sustainable case. Note that we have not considered the impact of carbon tax and any potential impairment of coal-fired power plants in the sustainable case. Our analysis points to Tenaga (TNB MK) being the most resilient.

**Difference in 2020-2030 turnover/earnings CAGR under base and sustainable scenarios**



Source: Companies, DBS  
 \* CAGR between 2021 to 2030

## How high is the risk of carbon emissions?

### Potential risk from carbon pricing

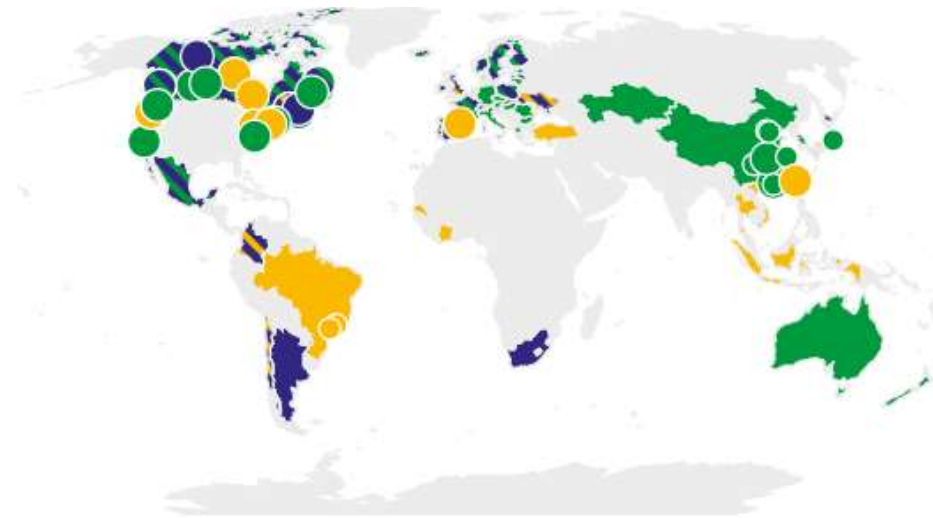
For oil & gas exploration and power generation companies, in the process of transiting from a high carbon intensity business model to a green energy ecological system, one of the major risks comes from carbon pricing. To encourage and accelerate reduction of carbon emissions, some countries have already implemented or are in the process of implementing carbon pricing, as shown in the diagram on the right. By putting a monetary value on carbon emissions, the costs of climate change impacts and opportunities for low-carbon energy options can be better reflected in cost of production. It also helps to shift the burden for damage from emissions back to emitters.

Carbon pricing is implemented mainly through carbon tax and emission trading system (ETS) or cap-and-trade programme. A carbon tax directly sets a price on carbons by defining an explicit tax rate on emissions. An ETS allows emitters to trade emission units to meet their emission targets which are set by regulatory authorities. Price for emissions is established through supply and demand of emission units.

The effectiveness of carbon tax and ETS in reducing emission is not conclusive. Emissions in British Columbia have dropped by as much as 8% since the introduction of a carbon tax in 2008. But carbon tax in Norway, introduced 20 years earlier, has not reduced the country's carbon emissions. The effectiveness of EU ETS, the first and largest multinational ETS in the world, on reducing emissions also remains controversial. However, various ETS reforms have been implemented in many countries, which should raise the effectiveness of ETS in reducing emissions.

More importantly, carbon pricing mechanisms, either carbon tax or ETS, are needed to incentivise changes in consumption, production and investment behaviour for transition to a low carbon society. We should see an increasing number of countries or jurisdictions implementing some form of carbon pricing mechanism.

### Summary map of carbon pricing initiatives (as of April 2020)



- ETS implemented or scheduled for implementation
- Carbon tax implemented or scheduled for implementation
- ETS or carbon tax under consideration
- ETS and carbon tax implemented or scheduled
- ETS implemented or scheduled, ETS or carbon tax under consideration
- Carbon tax implemented or scheduled, ETS under consideration

Source: The World Bank

**Environmental, Social and Governance**

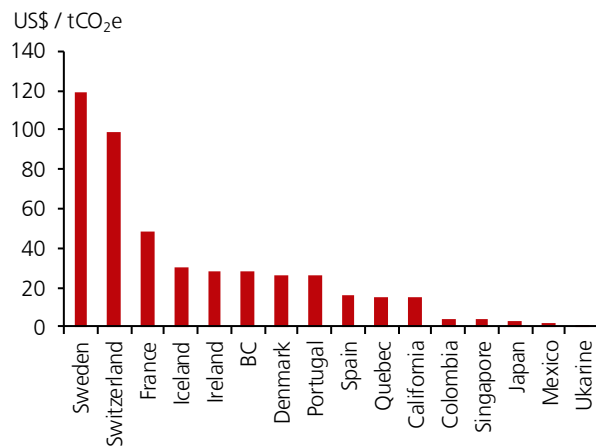
**Accelerated by border carbon adjustment**

Due to the different regulations / policies on carbon tax around the world, there is a risk of carbon leakage i.e. emissions in one country is increased due to transfer of production from countries with stricter emission standards. Thus, there are discussions taking place on the implementation of border carbon adjustments, such as carbon taxing countries levying import tariffs on goods manufactured in non-carbon taxing countries. This mechanism could ensure a level playing field in international trade while internalising the costs of climate damage into prices of goods and services. This could accelerate the adoption of carbon taxes in non-carbon taxing countries.

According to data from the World Bank, carbon tax varies from US\$119.43 per ton of carbon dioxide equivalent (tCO<sub>2</sub>e) in Sweden to just US\$0.38/ tCO<sub>2</sub>e in Ukraine. Most countries have fixed the carbon tax at between US\$10 to US\$20/ tCO<sub>2</sub>e. In Asia, only a few countries have imposed carbon tax, such as Japan (US\$2.69/tCO<sub>2</sub>e) and Singapore (US\$3.51/tCO<sub>2</sub>e). Although the tax will increase in phases, the level in Asia is still considered low compared with other regions.

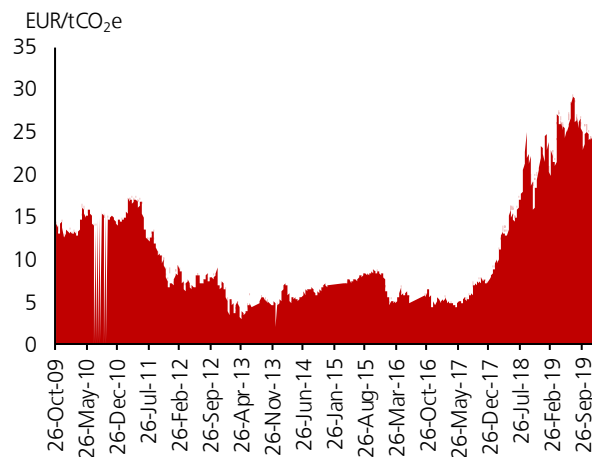
Carbon price under ETS depends on supply and demand. As shown in the charts below, carbon price varies quite significantly. In the EU, it jumped from <EUR10/ton of CO<sub>2</sub> in 2015 to >EUR20/ton in 2020. In China, Beijing has the highest carbon price while it varies between Rmb20-40/ton for other ETS.

**Carbon tax**



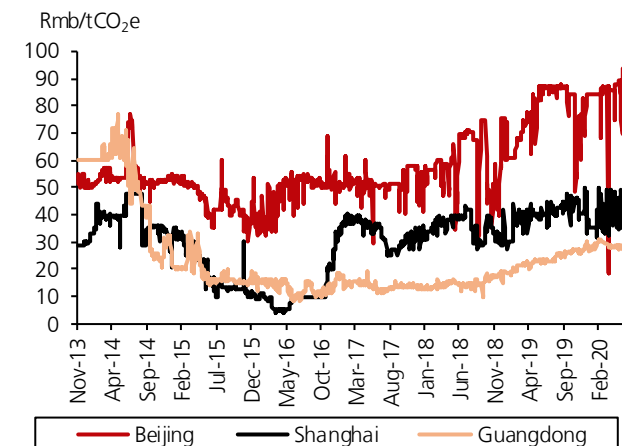
Source: The World Bank, DBS

**Carbon price in EU ETS**



Source: Business Insider, DBS

**Carbon price in China ETS**



Source: China carbon emission trading platform, DBS

**Risk from carbon tax is higher for power generation companies**

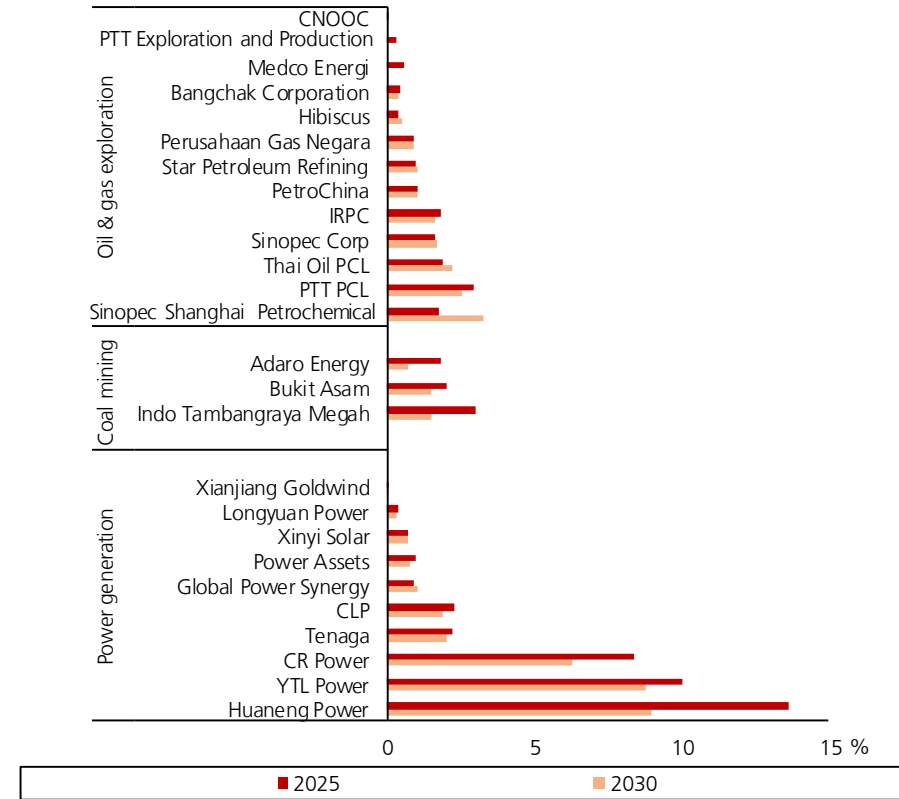
Currently, there is no carbon pricing in any form in Indonesia and Malaysia. However, China is implementing a trial run on ETS with a national ETS to be launched soon while the Thailand Voluntary Emission Reduction Program allows companies to trade carbon credits in Thailand. As many listed energy companies have effectively kept carbon emissions within the approved level, the negative impact of carbon pricing through ETS or trading of carbon credits is currently limited.

Although carbon tax is unlikely to be implemented in the above countries in the next one or two years, we should not rule out this happening in the long run; hence we should not undermine the possible impact on earnings. We have done a sensitivity analysis on earnings for every US\$1/tCO<sub>2</sub>e of carbon tax, assuming that there is no cost pass-through to end customers. Most companies under our coverage have an earnings sensitivity of less than 4% in 2030.

In our analysis, we have assumed: (a) long term crude oil price of US\$45-55/bbl and coal price sustainable at US\$70/ton; (b) output CAGR of 2-3% for most of oil & gas exploration companies in the coming 10 years; (c) coal demand staying flat for coal mining companies in the coming 10 years; (d) higher operating costs (due to R&D in new products/services or investments for carbon reduction, etc); and (e) improvement of <2% p.a. in carbon intensity through companies' decarbonisation strategies. Within our coverage, CNOOC (883 HK), PTT Exploration and Production (PTTEP TB), Medco Energi (MEDC IJ) and Bangchak Corp. (BCP TB) have the lowest sensitivity to carbon tax due to their higher profitability.

For conventional power generation companies, we have assumed minimum negative impact on demand for electricity from climate change. We have also considered higher operating costs (due to the switch to cleaner fuel or investment in carbon reduction facilities). Apart from renewable energy plays, Power Assets (6 HK) and Global Power Synergy (GPSC TB) have the lowest sensitivity to carbon tax, due to their higher percentage of low-carbon intensity power generation capacity and relatively high profit margin.

**Earnings impact from every US\$1/tCO<sub>2</sub>e of carbon tax**



Source: Companies, DBS

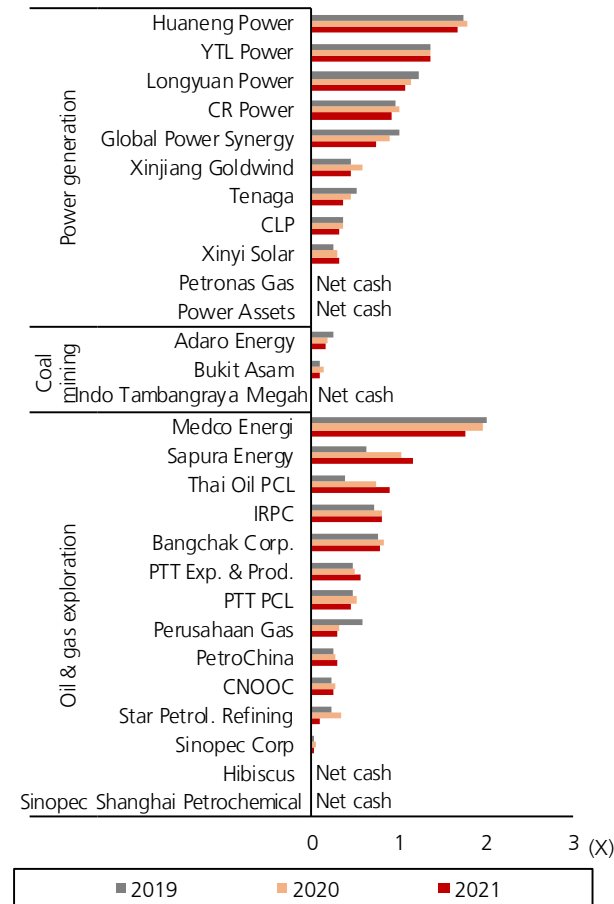
Who has a stronger balance sheet to accelerate decarbonisation?

Although we do not see a jump in the total capex in the energy companies under our coverage, we believe a certain amount has been spent on climate-related issues. For instance, apart from investing Rmb650m in energy and water saving projects, PetroChina (857 HK) has also further improved its carbon capture, utilisation and storage systems for carbon reduction. Hibiscus (HIBI MK) has reduced carbon emissions through installation of solar panels on its oilfields to power gas turbines and diesel generators.

As more stakeholders, including shareholders, customers and regulators, pay more attention to climate change, investments in climate-related issues will certainly go up. We have shown a comparison of net debt-equity ratios of our coverage to assess which companies have a stronger balance sheet to accelerate decarbonisation in the short term.

Under our coverage, Hibiscus (HIBI MK), Indo Tambangraya Megah (ITMG IJ), Petronas Gas (PTG MK), Power Assets (6 HK) and Sinopec Shanghai Petrochemical (338 HK) are expected to be in net cash position in FY20 and FY21 and have the strongest financial strength to invest more to reduce carbon emissions. Though with modest leverage, Sinopec (386 HK) is also in a good financial position to invest more capital in decarbonisation.

Net debt-equity comparison



Source: Companies, DBS

Areas to improve financial disclosure on climate-related issues

Around one-third of stocks under our coverage showed downtrend in carbon intensity

We conducted an assessment on carbon performance and management quality with respect to climate-related financial disclosure on our coverage. With the exception of a few companies which did not disclose the amount of greenhouse gas emissions, around 30% of our covered universe in oil & gas exploration and power generation sectors showed consistent downtrend in carbon intensity in the past three years, albeit marginal. Carbon intensity trend of coal miners that we cover, on the other hand, displayed some volatility.

The majority of oil & gas exploration companies under our coverage had a carbon intensity score between 60 – 80 gCO<sub>2</sub>e/MJ (grams of carbon dioxide equivalent per

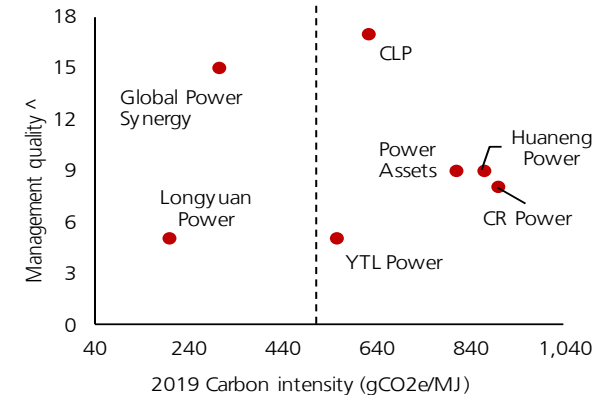
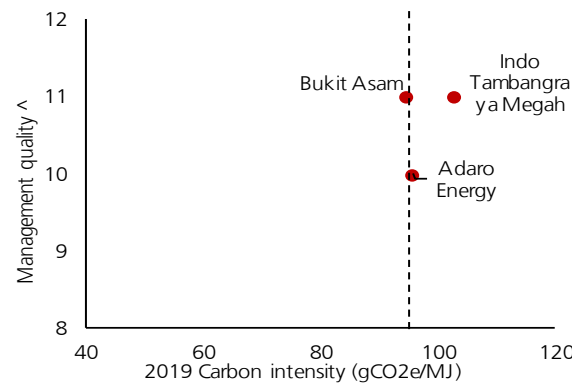
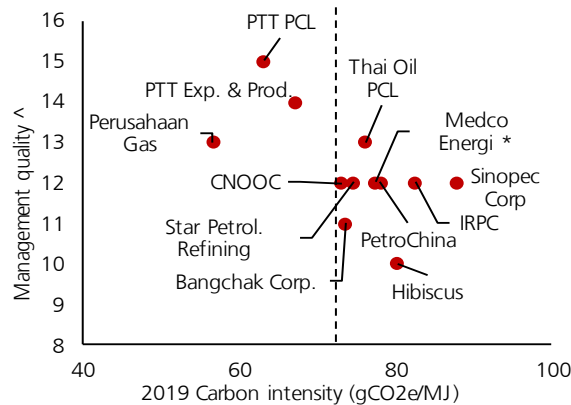
megajoules) in 2019. This is in line with the latest assessment on around 30 global oil & gas exploration companies done by Transition Pathway Initiative (TPI) where the sector mean was around 73 gCO<sub>2</sub>e/MJ.

The carbon intensity of over 40 electricity utility companies from around the world assessed by TPI ranged from 100 to 800 gCO<sub>2</sub>e/kWh (grams of carbon dioxide equivalent per kilowatt-hour) with a sector mean of around 480 gCO<sub>2</sub>e/kWh. The traditional electricity generation companies under our coverage have high carbon intensity of over 800 gCO<sub>2</sub>e/kWh. Those with higher percentage of power generation from clean / renewable energy, such as Global Power Synergy, are able to achieve a level that is below the sector mean.

Assessment results – oil & gas companies

Assessment results – coal mining companies

Assessment results – power generation companies



Source: Companies, DBS

\* 2018 carbon intensity figure ^ number of "yes" for questions in Appendix II

----- sector average

### Thailand has higher transparency

All energy sector stocks under our coverage acknowledge that climate change has a significant impact on their operations and most of them have developed some basic capacity or management systems to report on performance in climate risk mitigation.

We reckon that companies in Thailand have the best transparency, followed by Indonesia, China / Hong Kong and Malaysia. The better disclosure of companies in Thailand and Indonesia mainly comes from two areas:

- 1) Companies have set quantitative targets to reduce greenhouse gas emissions;
- 2) Companies have disclosed scope 3 emissions, i.e. indirect emissions (excluding those from the generation of purchased energy) that occur in the value chain, including both upstream and downstream emissions.

### Internal carbon pricing and scenario planning not widely adopted by energy companies in Asia yet

Only two companies in our coverage universe – PTT PCL (PTT TB) and Hibiscus (HIBI MK) - have adopted a climate change risk assessment exercise and internal carbon pricing mechanism. However, we believe the situation will improve. In fact, the number of companies that made disclosures to CDP that they have imputed an internal carbon price in their business strategies has grown from 150 in 2014 to over 600 in 2017. This method is an effective tool to assess future investments and operational costs and as a way of hedging against future policy changes on carbon emissions.

Microsoft is a success story on reduction in energy cost through implementation of internal carbon pricing. An internal carbon fee is charged to individual business groups using Microsoft services (in place since 2012) and funds from this internal tax is used to invest in energy efficiency initiatives, renewable energy, etc. In three years, Microsoft was able to reduce 7.5m tonnes of CO<sub>2</sub> and save more than US\$10m in energy costs with 100% of energy consumption being sourced from or offset by renewable energy.

With the exception of CLP (2 HK) and Medco Energi (MEDC IJ), companies under our coverage are also struggling with scenario analysis due to the wide range of uncertainties related to climate-related assumptions. This will in turn result in difficulties in assessing the probability and scale of impact. A survey conducted by Task Force on Climate-related Financial Disclosure (TCFD) in 2019 suggested that around 56% of 198 respondents said their companies use scenarios to assess the resilience of their strategies with around 22% not using scenarios at this time. However, out of those respondents using scenario analysis, less than 50% publicly disclose information on the resilience of their strategies under different climate-related scenarios. Thus, TCFD issued a technical supplement and practical guide to help companies perform scenario analysis.

### Limited disclosure on remuneration of senior executives with respect to climate change performance

Another area that needs improvement is disclosure on remuneration of senior executives in respect of climate change performance, if any. In this exercise, only two companies, i.e. CLP (2 HK) and Sinopec (386 HK), have made such disclosures. We believe setting key performance indicators for climate change performance, particularly for senior executives and board of directors, is important in demonstrating management's commitment in mitigating climate change risk and can encourage the company to lower carbon emissions.

### Increasing disclosure requirements by regulators

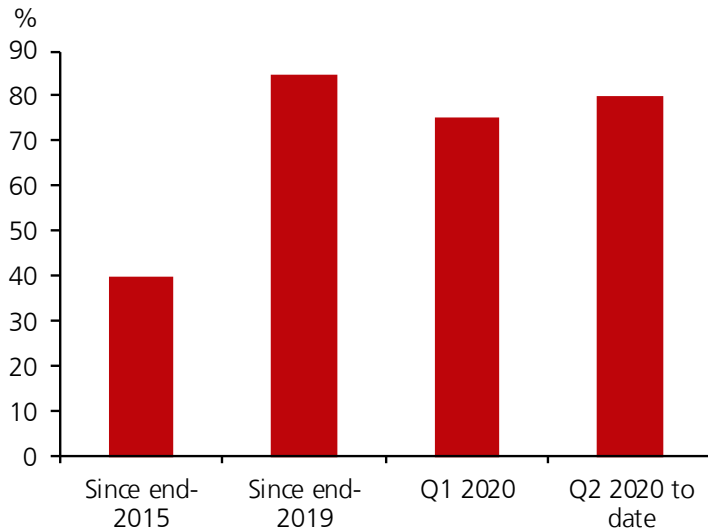
Climate Action 100+ was launched in late 2017 by investors around the world to ensure the world's largest corporate greenhouse gas emitters take action on climate change. To date, more than 450 investors with more than US\$40tn in assets under management have joined the action, clearly demonstrating growing demand for more climate-related financial information by investors. Regulators in Asia are also responding to requests from investors and are increasing financial disclosure requirements (See Appendix III). Thus, we believe this should help investors to better assess climate change risk.

**Environmental, Social and Governance**

**Our stock picks**

Research from the Institute of International Finance showed that 85% of ESG equity indices outperformed non-ESG peers in 1Q 2020. In fact, since the end of 2015, the percentage of ESG equity indices outperforming has been high. These provide strong evidence of a positive correlation between ESG and company performance or share price#. We believe a positive correlation between climate-related issues and company performance also exists.

**Percentage of ESG equity indices outperforming non-ESG counterparts**



Source: Bloomberg Financial L.P., IIF

After making an assessment on management quality and evaluation of financial risk, we make our recommendations based on the following criteria:

- 1) Possess strong commitment to improve financial disclosure on climate-related issues; or
- 2) Possess effective business strategy to mitigate climate change risk and lower carbon emissions; or
- 3) Possess relatively lower financial risk as it transitions to a green economy.

The operating environment has changed dramatically for energy companies due to society's concerns on climate change. We believe only those companies with strong commitment and the right strategy to adapt to the changes will win.

We like:

**Adaro Energy (ADRO IJ, BUY, TP Rp1,400)**

- New initiatives show management's strong commitment to mitigate climate change risk, including setting quantitative targets for emission reduction and incorporating these targets into management's KPI;
- Sound decarbonisation and diversification strategies into eight business pillars with good track record in lowering carbon intensity and water consumption;
- Lower earnings sensitivity to carbon tax than its peers.

# References:

"Corporate governance and equity prices" by Gompers, Ishii, Metrick (2001)

"Does the stock market fully value intangibles? Employee satisfaction and equity prices" by Alex Edmans (2011)

"Corporate sustainability: First evidence on Materiality" by Khan, Serafeim, Yoon (2015)

"Coordinated engagements" by Dimson, Karakas, Li (2019)

"The eco-efficiency premium puzzle" by Derwall, Bauer, Guenster, Koedijk (2005)

"ESG and financial performance: Aggregated evidence from more than 2000 empirical studies" by Friede, Busch and Bassen (2015)



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**CNOOC (883 HK, BUY, TP HK\$12.00)**

- Highly competitive cost structure with a commendable low all-in cost at below US\$30 per barrel of oil equivalent (boe);
- Relatively early foray into alternative energy sources, including offshore wind energy to reduce carbon footprint;
- Lower sensitivity to carbon tax than its peers.

**Thai Oil PCL (TOP TB, BUY, TP Bt54.00)**

- Various new initiatives to reduce carbon emissions, including a new clean fuel project, investment into a new EURO5 standard renewable power plant project, etc;
- Most resilient and reliable refinery with the lowest refinery operating cash cost of US\$1.4-1.5/bbl;
- One of the pioneers in using carbon pricing in investment decisions among its peers.

**Xinjiang Goldwind (2208 HK, BUY, TP HK\$10.00)**

- Strong R&D capability, particularly in advanced materials to mitigate risk from extreme weather;
- New initiatives to develop stronger commitment in mitigating climate-related risks, which includes setting up quantitative targets for carbon reduction, incorporating climate-related goals in management's KPI, increasing percentage of energy consumption from renewable energy, etc;
- Minimum risk from carbon pricing with more business opportunities from increasing global installations of wind power plants.

## STOCK PICKS

## Adaro Energy (ADRO IJ)

### BUY

Last Traded Price (14 Jul 2020): Rp1,155

Price Target 12-mth: Rp1,400 (21.2% upside)

#### Analyst

William Simadiputra +62 2130034939 williamsima@db.com

#### Forecasts and Valuation

FY Dec (US\$m)	2018A	2019A	2020F	2021F
Revenue	3,620	3,457	2,926	3,164
EBITDA	1,099	1,051	968	1,060
Pre-tax Profit	821	659	667	739
Net Profit	418	404	293	326
Net Pft (Pre Ex.)	418	519	293	326
Net Pft Gth (Pre-ex) (%)	(13.6)	24.2	(43.4)	10.9
EPS (Rp)	189	183	133	147
EPS Pre Ex. (Rp)	189	234	133	147
EPS Gth Pre Ex (%)	(14)	24	(43)	11
Diluted EPS (Rp)	189	183	133	147
Net DPS (Rp)	100	125	66.3	73.5
BV Per Share (Rp)	1,649	1,685	1,751	1,825
PE (X)	6.1	6.3	8.7	7.9
PE Pre Ex. (X)	6.1	4.9	8.7	7.9
P/Cash Flow (X)	3.9	10.6	5.3	4.4
EV/EBITDA (X)	3.4	3.0	3.5	3.1
Net Div Yield (%)	8.7	10.8	5.7	6.4
P/Book Value (X)	0.7	0.7	0.7	0.6
Net Debt/Equity (X)	0.1	0.1	0.1	0.1
ROAE (%)	11.7	11.0	7.7	8.2
Earnings Rev (%):		0	0	0
Consensus EPS (Rp):			130	145
Other Broker Recs:		B: 11	S: 5	H: 8

Source of all data on this page: Company, DBSVI, Bloomberg Finance L.P.

**Decarbonising coal?** As an integrated coal mining company, Adaro Energy (ADRO) is very aware of rising environmental and social aspects of the business, including climate change. Its "Envirocoal" brand ensures that its low-calorie coal complies with specifications at most power plants in Asia. Other than utilising environmental compliance as part of its marketing strategy, other key initiatives include: 1) reducing carbon intensity from 0.46 GJ/tonne of coal to 0.43 GJ/tonne of coal, including greenhouse gas reduction of 0.033 total emission/tonne of coal; it also reduced its water requirements in operations by 16% in 2019, 2) recycling and reusing, e.g. recycling rain water, 3) committed to improving disclosure and actions in dealing with climate change, 4) it is ahead of its industry peers in climate change. Currently, there is no mandatory disclosure for operations and licensing of coal mining.

#### Immediate action plans

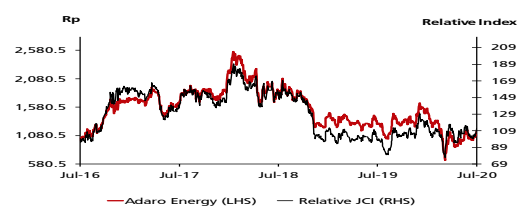
The company will push its subsidiaries, including thermal coal mining concessionaire Adaro Indonesia, to complement its conventional scorecard with improved energy intensity targets annually. Another potential long term plan is linking environmental performance to management's remuneration.

Other than evaluating conventional mining costs such as fuel and mining services, the company will start assessing carbon capture and taxes for its future earnings. It will continue to focus on mining efficiencies to mitigate any rise in environmental related cost.


#### Financial risks in the next 5-10 years

Despite the recent approval of the new Coal and Mineral Bill (UU Minerba), Indonesia still does not have any framework on carbon taxes/pricing for renewal of mining licences and operations. However, we assume that there will be an additional carbon tax of US\$1/tCO<sub>2</sub>e on top of the 45% tax rate according to the respective Coal Contracts of Work (CCOW) mining licences. We also lower our coal price assumption to US\$60 per ton on demand drop of 1% compound annual growth rate (CAGR) in 2025-2030. This translates to an earnings hit of US\$100m/US\$75m in 2025/2030.

#### Price Relative



### Climate-related financial disclosure

Element	Comments
Governance 	<ul style="list-style-type: none"> <li> <b>Well established corporate governance structure</b>            The company's Chief Executive Officer (CEO) and Chief Operating Officer (COO) are leading the sustainability committee to handle climate related issues. The Board of Directors has laid a strong framework to tackle challenges on climate change. ADRO's sustainability report in 2019 was the first step. Going forward, it is planning full disclosure of the decarbonisation process and good mining practices to show that it is committed to reducing emissions.           <ul style="list-style-type: none"> <li>Shareholders: The company's shareholders met in 2019 at the General Meeting of Shareholders (GMS) to set the company's business development and strategic targets.</li> <li>Commissioners: The Board of Commissioners, with the help of the Audit Committee, is responsible in ensuring the execution of Good Corporate Governance (GCG) principles by the Board of Directors. The Board of Commissioners is held accountable for the implementation of its duties through GMS.</li> <li>Directors: The Board of Directors, in particular the COO, is responsible for making decisions in the environmental field through the Health, Safety, and Environment Division. The CEO is also responsible for overall sustainability issues including good mining practices, corporate governance and social aspects.</li> <li>Risk Management: The Risk Management Unit (RMU) will aggregate and consolidate the risk profile from all business units and conduct risk assessments at corporate level with ADRO's Board of Directors semi-annually,            The Board of Directors holds monthly management meetings on climate related issues. The CEO's attendance was &gt; 80% in 2018 and 2019. Other than discussing the company's operational and financial performance, discussion on climate related issues have increased in the last two years</li> </ul> </li> <li> <b>Responsibility for risk management of climate changes</b>  <b>ADRO's CEO and Board are primarily responsible</b> for the company's climate related issues. The Board of Directors discloses relevant issues in monthly meetings. This commitment is part of management initiatives to address climate issues. Indonesia is still in the process of developing a concrete framework for carbon taxes.            The RMU has adopted the "three lines of defence" approach. The first line is adopted by each business unit and management to identify and manage risk. The second line is the RMU that supports business units by giving relevant advice and assistance. The third line is the Internal Audit that conducts independent reviews on the effectiveness of risk controls and management.         </li> </ul>

- **Strategy, budget and blueprint for climate change**

**Access to external financing** such as bank loans and global bonds remains a priority for the management. This is to prevent any liquidity and financing risks as the company expands its thermal coal and non-thermal coal ventures.

**Inorganic growth beyond thermal coal.** This is to reduce the risk of potential liabilities that may arise from climate change related issues. It could also lead to a higher valuation multiple. Indonesia's coal mining stocks have been trading at single digit price-to-earnings (PE) since 2016. ADRO's management is also assessing ways to maximise profitability (or margin per ton of coal) to mitigate carbon taxes and liabilities.

**Importance of risk management.** The role of assessing risks, formulating mitigation and synchronising plans are implemented by the company's respective business unit and coordinated by a risk champion. As of December 2019, there were 132 risk champions across all business units. These units comprise a minimum of 2 employees. Their main responsibilities are facilitating the risk assessment process including climate change risk, aligning risk profiles with annual budgets and plans, and raising relevant matters in management meetings.

- **Monitoring progress of goals and targets**

**Goals on climate issues discussed in monthly meetings.** The management holds monthly meetings to discuss ADRO's broad operational and financial performance. There has been increasing discussion on climate change in the past two years, including social and environmental issues, as well as carbon intensity reduction.

- **Responsibilities / KPIs / incentives on climate change**

Currently, ADRO's climate change initiatives are mainly internal, especially to make its operations greener. It does not have any remuneration incentives for the management in relation to climate related key performance indicators (KPIs). However, it has set certain greenhouse gas (GHG) emissions metrics at its subsidiaries. Going forward, the company could link climate issues with management remuneration. This will depend on Indonesia's framework for climate change initiatives in the coal mining industry and the company's workforce.

## Strategy


 Good

- **Focus on water management, good mining practice and forest land bank**

**Water management.** Land water purity and level are the key factors affecting the environment, including the forest. ADRO's emphasis on sustainability includes recycling of used water to minimise exploitation of external water. ADRO discloses its water usage from many sources such as rain and internal pit water. Its recycling efforts are to minimise excessive water usage which may pose environmental and social risks.

**Carbon capture and trade initiatives.** ADRO has implemented carbon capture naturally by maintaining its green land bank with planted trees. Currently, ADRO is not able to quantify the carbon absorption by its subsidiary Adaro Land. However, its forest land concession has been designated a potential carbon trade in the future.

**Preventing landscape changes.** ADRO will continue to implement good mining practices to prevent land degradation and erosion that may pose risks to the concession.

- **Carbon trade may minimise higher carbon taxes.** The potential of carbon trade may minimise higher carbon taxes. Adaro Land has subsidiaries owning forest management permits for ecosystem restoration and carbon absorption. One of the key areas for development is ecosystem restoration and carbon capture in forest areas that can absorb carbon dioxide (CO<sub>2</sub>) emissions from mining activities. PT Hutan Amanah Lestari (HAL) is a business licence holder for utilisation of carbon absorption (Izin Usaha Pemanfaatan Penyerapan dan/atau Penyimpanan Karbon (IUP PAN/RAP Karbon)) to implement ADRO's energy and greenhouse gas policies. As one of the largest holders of IUP PAN/RAP Karbon concessions in Indonesia, HAL is expecting its carbon trading business to be its main business.
- **Water treatment.**
  1. ADRO treats water from its mining activities (sump pit) and rainwater, both of which are directed to settling ponds for further processing. Water from the settling ponds is directed to the water treatment facility to be processed into clean water, which will be further distributed to the surrounding community via pipes and water trucks.
  2. To reduce the use of river water, a recycling process of the wastewater from the settling ponds is conducted on the coal processing and barge loading activities in Kelanis using the closed-cycle system. Wastewater is processed into clean water to be reused.
- **Post-mining rehabilitation plan.** Adaro Indonesia (AI) has prepared post-mining plans that will be adjusted periodically to comply with Indonesia's laws and regulations in the environmental management sector. These plans also incorporate various environmental considerations into all phases of planning, construction, operations and closure of all facilities. ADRO also communicates with the government, non-governmental organisations (NGOs), communities, employees and other related stakeholders to foster cooperation, partnership and ensure that all programmes are implemented with best practices.

**Access to financing.** Climate changes may limit ADRO's coal mining subsidiary AI's access to debt financing and possibly stricter equity financing due to wary creditors and investors. ADRO will need to seize on its organic efficiencies to maintain good operating margins to finance its expansion and pay dividends to its shareholders.

**Inorganic growth may accelerate diversification beyond thermal coal.** With the purchase of Kestrel's hard coking coal mine, ADRO is sticking to organic growth for its power plant, water treatment and logistics businesses. Acquiring other coal mining companies will be challenging. Other than traditional operating metrics, other factors such as environmental, social and governance (ESG) metrics could increase the company's integration cost.

### Strategy



Good

**Financial impact.** Currently, ADRO has limited exposure to climate change risk. However, coal prices and carbon taxes may pose significant risks to its earnings. In a climate change scenario, we estimate coal prices of US\$60 per tonne in 2025-2030 with 1% CAGR drop in demand (vs our base case forecast US\$70 per tonne, flattish demand). Combined with US\$1 per tCO<sub>2</sub>e of carbon taxes, ADRO's earnings could drop by 30% in 2025 and 21% in 2030.

- **Using climate scenarios in strategy and financial planning.**

**Mining license extension.** Indonesia's government has not enforced regulations on global warming issues, beyond the rehabilitation of mining concessions and good mining practices in renewal/extension of mining licences. ADRO will focus on the renewal of its mining licence in 2022 to ensure that its operations are not disrupted.

- **How are these strategies different from its peers?**

ADRO proactively assesses its global warming potential (GWP) to measure its operations beyond the conventional metrics. As one of the largest coal mining companies in Indonesia in terms of production and market capitalisation, ADRO will follow any GWP developments from stakeholders such as the government, shareholders and end users.

Another differentiation is investment beyond the thermal coal sector such as logistics, land/property and power plant sectors. With finite demand growth from thermal coal, ADRO is aware of the need to expand beyond thermal coal as soon as possible.

## Risk management


 Strong

- **Identifying and assessing climate related risks.**

**Awareness of good mining practices.** ADRO has identified some components of mining activities exposed to risk of climate changes such as: i) water usage, ii) practices of 158 business partners in mining services, in accordance with to the Contractor Safety Management System (CSMS), iii) procurement of materials and goods in compliance with the Stockholm Convention on avoiding ozone depleting materials.

**Coal prices.** ADRO is also aware of long term structural demand changes that may affect the economic value of its coal reserves, as well as the company's earnings and share price. Coal accounts for 50% of the energy mix in China and major developing ASEAN countries.

Awareness on climate change, coupled with cheap natural gas, may lead some countries to rethink their exposure to coal energy.

**Carbon trades and taxes.** ADRO's management sees various opportunities in the future of carbon trade and pricing as part of its strategy to minimise potential exposure to carbon taxes. Currently, Indonesia does not have any framework on carbon pricing and taxes. However, this could quickly change with the rising risk of climate changes.

- **Aligning decarbonisation efficiencies**

**Controlling energy usage.** ADRO measures energy usage from various sources such as coal for its coal fired power plant, as well as B20 biodiesel fuel for both its logistics and mining sectors. This identifies the effectiveness of its energy consumption per tonne of coal produced, referred to as energy intensity. Best mining practices and efficient machineries are the two key factors in boosting fuel efficiencies.

**Cost cutting.** Anticipate uncertainties on coal price direction due to demand changes amid the COVID-19 pandemic and climate changes which may affect the appetite of coal buyers. These underlying factors lead to ADRO taking a cautious view on coal prices. Since coal prices are beyond its control, ADRO will focus on producing at the lowest cost per ton in the industry. ADRO's open pit coal mining allows it to operate at a cash cost of around US\$29 per ton via strip ratio and coal transportation/overhaul management.

**Huge forest in unused land bank.** ADRO has a huge forest land bank among its unused concession. This could be converted into a strategic portfolio such as property assets in the future. Besides the fiscal value of these assets, the conversion could offer better carbon capture and carbon trade opportunities in the future with the potential absorption of carbon emissions from ADRO's mining activities.

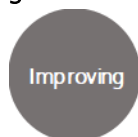
- **Integration into overall risk management**

Assessing the financial, social and environmental aspects of climate changes has always been the pillar of ADRO's risk management. This allows its management to view potential issues from every angle to make the right decision.



## Environmental, Social and Governance

### Metrics and targets



- **Energy efficiencies to maximise margins and lower emissions**

ADRO measures energy intensity in Gigajoule (GJ) per metric tonne as its internal benchmark. ADRO consumed 24.5m GJ of power in 2018 and 2019, while coal production rose from 53m tonnes to 56m tonnes in 2018 and 2019. This resulted in energy intensity of coal dropping from 0.46 GJ/tonne to 0.43GJ/tonne.

- **Scope 1 emission disclosure, with potential disclosure of scope 2 and 3 emissions**

Currently, ADRO discloses scope 1 emissions related to its coal mining activities. It also uses GHG emission intensity standard by measuring scope 1 emissions relative to its total coal production. GHG emissions dropped from 0.036 total emissions/tonne to 0.033 total emissions/tonne between 2018 and 2019. Although an implementation timeline is uncertain, ADRO may consider disclosing scope 2 and 3 emissions in the future.

- **Targeting lower emissions and energy intensity y-o-y**

Although there are no exact timelines to achieve climate change targets, ADRO is consistently targeting lower emissions and finding ways to reduce climate change risk. It is also aiming to gradually reduce its exposure to thermal coal via portfolio expansion beyond thermal coal assets.

*Source: Company, DBSVI*

## CNOOC Ltd (883 HK)

### BUY

Last Traded Price ( 14 Jul 2020):HK\$8.72

Price Target 12-mth:HK\$12.00 (37.6% upside)

#### Analyst

Pei Hwa HO+65 6682 3714, peihwa@dbs.com

#### Forecasts and Valuation

FY Dec (RMB m)	2018A	2019A	2020F	2021F
Turnover	226.963	233.199	138.735	193.092
EBITDA	130.058	148.146	71.779	107.679
Pre-tax Profit	75.177	85.649	13.239	45.792
Net Profit	52.688	61.045	9.436	32.637
Net Profit Gth (Pre-ex) (%)	113.5	15.9	(84.5)	245.9
EPS (RMB)	1.18	1.37	0.21	0.73
EPS (HK\$)	1.31	1.51	0.23	0.81
EPS Gth (%)	113.5	15.9	(84.5)	245.9
Diluted EPS (HK\$)	1.31	1.51	0.23	0.81
DPS (HK\$)	0.58	0.72	0.33	0.39
BV Per Share (HK\$)	10.41	11.11	11.01	11.43
PE (X)	6.7	5.8	37.3	10.8
P/Cash Flow (X)	2.8	2.8	5.7	3.7
P/Free CF (X)	5.7	8.0	nm	38.5
EV/EBITDA (X)	3.6	3.0	6.5	4.3
Net Div Yield (%)	6.7	8.2	3.8	4.4
P/Book Value (X)	0.8	0.8	0.8	0.8
Net Debt/Equity (X)	0.3	0.2	0.3	0.2
ROAE (%)	13.2	14.1	2.1	7.2

Earnings Rev (%): Nil Nil

Consensus EPS (RMB) 0.38 0.73

Other Broker Recs: B:17 S:1 H:3

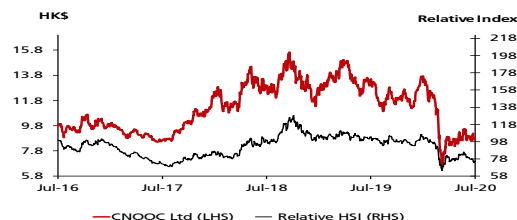
Source: Company, DBS Bank (Hong Kong) Limited ("DBS HK"), Thomson Reuters

**Sound portfolio resilience in a low carbon future.** We believe CNOOC is better positioned than the average upstream company to thrive in a low carbon future, although there is room for improvement in some areas. The key reasons underpinning our thesis include: 1) CNOOC's highly competitive cost structure, with a commendable low all-in cost below US\$30/boe, 2) the company's relatively early foray into alternative energy sources, like offshore wind energy, which will reduce CNOOC's carbon footprint, and 3) the company's low sensitivity to carbon taxes.

CNOOC's low financial leverage (net cash position), coupled with its robust ability to generate operating cash flow from its conventional oil and gas portfolio (due to its cost efficiency), will better enable the company to capitalise on opportunities arising from the energy transition and pivot towards cleaner energy and carbon management technology. We like that CNOOC supports the climate goals set in the Paris Agreement, and is aiming to be an industry leader on overall green and low-carbon indicators. However, we believe CNOOC could augment its ESG quality by broadening disclosure on emissions metrics, and publicly articulating measurable medium to long-term emission reduction targets.

Over the past few years, CNOOC's carbon intensity has been flat at around 17.3kg of CO<sub>2</sub>/boe. While carbon pricing is absent in its domestic operations, and only present in some of its international operations, we expect it to become prevalent globally later this decade. We estimate the impact of carbon pricing on CNOOC to be minimal, with every US\$1 per tCO<sub>2</sub>e expected to reduce earnings by a mere 0.08% p.a. in FY25 –FY30.

#### Price Relative



### Climate-related financial disclosure

Element	Comments
Governance  	<ul style="list-style-type: none"> <li> <p><b>CNOOC places great emphasis on ESG management across all levels</b></p> <ol style="list-style-type: none"> <li>1. The Board is ultimately responsible for the company's ESG strategy and reporting, and holds Board meetings at least four times a year at quarterly intervals, with ESG-related issues as one of the agendas for each meeting. The Risk Control Officer provides semi-annual updates on risk-related matters.</li> <li>2. CNOOC established an ESG Audit Committee (AM) in 2016, with the CEO acting as the director of the committee, and other executives as members, to evaluate and review the company's ESG performance and report.</li> <li>3. The ESG AM heads a working group, comprising the heads of CNOOC's operations, such as the heads of oil and gas sales, procurement, risk management, etc. This group is responsible for preparing ESG reports and providing regular updates to the Committee.</li> </ol> </li>   <li> <p><b>Climate-change risk has long been regarded as a major risk to CNOOC's long-term operations</b></p> <p>The Risk Control Office is responsible for evaluating the impact of climate change, and works closely with the Quality, Health, Safety and Environment (QHSE) team and other relevant business units to not only establish but execute risk mitigation processes.</p> </li>   <li> <p><b>The Group supports the climate goals in the Paris Agreement</b></p> <p>CNOOC issued the Green Development Action Plan in 2019 which clarified its green development targets in the short term (2020), mid-term (2035) and long term (2050). The action plan will enable the Group to meet targets set in the Paris Agreement, keep up with leading international peers amid the transition towards greener energy, and remain an integral and relevant player in the energy sector in the long term.</p> </li>   <li> <p><b>Governance could be improved by aligning Executive remuneration with ESG performance</b></p> <p>Unlike domestic peer Sinopec, we do not believe that CNOOC's ESG performance is a component in determining Executive compensation and bonuses. We believe Executive compensation should ideally be tied to transparent and measurable ESG-related criteria to sharpen the company's focus on enhancing ESG quality.</p> </li> </ul>

## Strategy


 Good

- **CNOOC is cognisant of the risks and opportunities that could arise from climate change**

Key climate-related risks identified by the company include: 1) shift in consumer preference towards low-carbon products, 2) cannibalisation of traditional fuels by alternative fuel types developed, 3) increasing costs associated with compliance and reducing carbon intensity, and 4) increase of extreme weather phenomena caused by climate change, which is especially relevant given the company's offshore focus. Key opportunities recognised by the company include: 1) development of new energy and new businesses, 2) exploration on the use of carbon dioxide, and development of carbon control technologies, and 3) significant expansion in natural gas/LNG presence.

- **Multi-pronged approach to promote sustainable development**

CNOOC's strategy to deal with climate change risk revolves around three pillars – 1) Green Oil Field Plan: to strengthen risk monitoring mechanisms, and augment resource and operation efficiency, and invest in technology to deal with pollutant emissions and waste management, 2) Clean Energy Plan: boost natural gas reserves and natural gas production, and develop offshore wind farms which are synergistic to CNOOC's current asset portfolio, and 3) Green and Low-carbon Plan: actively track and monitor carbon emissions across its asset base, create a low-carbon control system and participate in carbon trading schemes, and explore innovative usage of carbon dioxide to cut emissions, such as enhanced oil recovery and reinjection.

- **CNOOC fares better than the sector average in terms of upstream portfolio resilience**

Although oil and gas companies are diversifying into alternative energy sources, their upstream portfolios will likely remain the most critical driver of corporate value in the short-to-medium term. A recent study performed by Woodmac showed that CNOOC performed in line with the sector average on a NPV/tonne metric (a carbon efficiency measure that relates the value created for each tonne of carbon emitted from its upstream assets), and considerably above the sector average on post-capex cash margin (which evaluates the company's cost structure, and determines their ability to thrive in a low oil price environment). CNOOC's pure concentration in deepwater and conventional shelf assets is advantageous as such assets typically demonstrate relatively lower emission intensity, and healthier economics post capital spending compared to other asset classes like conventional onshore and tight oil.

- **Comprehensive scenario analysis, coupled with sensitivity and stress testing could facilitate long-term planning**

CNOOC has not shared much information on the potential financial impact of climate change on its operations under various scenarios. There are multiple scenarios that would be of great interest to the market - running a thorough scenario analysis on the scenarios proposed by the IEA, or scenarios which encompass issues like how different carbon pricing schemes could affect CNOOC's profitability and asset portfolio, or how prolonged low crude oil prices would affect the robustness of CNOOC's portfolio. Additionally, CNOOC could share the assumptions underpinning the company's project selection criteria such as breakeven hurdle rates, long-term crude oil price, and the sensitivity of its portfolio to various factors, to provide more clarity to investors.

Risk  
management

- **Risk management and internal controls are top priority**

The company's Risk Management Committee is directly managed by the CEO of the company. The committee is responsible for the formulation, implementation and ongoing supervision of the company's overall risk management and control systems. In addition, the Risk Management Committee is also in charge of evaluating and approving response plans to major risks, as well as following up to ensure that response plans are performed effectively. In 2019, CNOOC achieved a satisfactory rating when it hired an external third-party consultant to benchmark its risk control system with the latest ISO 31000: 2018 Risk Management Guidelines and COSO Enterprise Risk Management Framework – Strategy and Performance (2017).

- **Materiality analysis to identify the most pertinent risks**

CNOOC performs a materiality analysis annually to construct a comprehensive materiality matrix of the various ESG issues that the company faces. Risks are assessed based on their severity and impact on the company, and likelihood of occurrence. Climate-related/environmental risks are not among the top three risks, but are among the top five. Operation-related risks like production safety and sustaining stable production are regarded as the company's most pertinent risks.

- **Broad environmental management framework**

All new projects are subjected to thorough environmental and ecological impact assessments which cover all stages from project design through construction, production, operation and disposal. CNOOC preserves the ecological integrity of its production sites to the best of its ability, by optimising site selection, and bolstering the prevention and remediation of oil spills. Testament to the company's solid risk management capabilities, CNOOC has not encountered a major environmental issue in the past six years.

- **Minimal impact from the implementation of carbon taxes**

The proliferation of carbon taxes across all countries and regions in the world will have a profound impact on the profitability of companies in the energy sector. Although carbon prices are low at around US\$2/tonne globally (based on the IMF's estimates), they are expected to increase dramatically over the next decade. In this aspect, we anticipate CNOOC to perform better than regional peers – the earnings impact from a US\$1/tonne of CO<sub>2</sub> carbon tax on CNOOC is estimated to be around 0.08% in 2025 and 2030, as compared to industry average forecasts of 1.14% and 1.22% in 2025 and 2030 respectively.

## Metrics and targets


 Good

- **Carbon intensity has been flat for the past few years; on par with industry average**

CNOOC's total Scope 1 and 2 carbon intensity has been relatively stable for the past three years, at around 17.3kg of CO<sub>2</sub>/boe, despite the significant rise in its capital investments on new projects. On a relative basis, while CNOOC's carbon intensity is still considerably higher than widely recognised industry leader, Equinor, which boasts an upstream CO<sub>2</sub>/emission intensity of 9.5kg of CO<sub>2</sub>/boe, the former's performance is in line with the industry average of 18kg CO<sub>2</sub>/boe.

- **More transparency and effort on data collection and interpretation could enhance ESG disclosure**

Unlike some of the ESG leaders in the sector, CNOOC has yet to begin reporting Scope 3 greenhouse gas emissions. This is especially important given that emissions along other parts of the oil and gas value chain typically represent the most significant share of an upstream oil and gas company's total emissions. Other metrics that CNOOC could report on include its methane emissions and intensity, and hydrocarbon flaring volume.

- **Lack of quantitative medium-term and long-term targets is a setback**

While CNOOC has announced a short-term carbon emission reduction target of 3.2m tonnes by 2020 from 2015's level, there is no publicly articulated target that the company is aiming for beyond 2020. CNOOC has stated that its goal is to reach an 'internationally advanced level' by 2035, and become an 'international leader' by 2050. While its goals are laudable, we believe that they are too qualitative in nature, which makes it difficult to track and monitor the company's performance. Apart from emission data, CNOOC has also yet to disclose its long-term investment plans or quantitative targets for its offshore wind/alternative green energy ambitions, which would be helpful for ESG-oriented investors to evaluate how green the company's future asset portfolio will be.

Source: Company, DBS HK

## Thai Oil PCL (TOP TB)

### BUY

Last Traded Price (14 Jul 2020): Bt42.25

Price Target 12-mth: Bt54.00 (28% upside)

#### Analyst

Duladeth BIK, CFA, FRM, CAIA | duladethb@th.dbs.com

#### Forecasts and Valuation

FY Dec (Btm)	2018A	2019A	2020F	2021F
Revenue	389,344	364,327	252,387	257,003
EBITDA	22,946	17,201	22,427	20,638
Pre-tax Profit	12,367	7,756	2,401	6,742
Net Profit	10,149	6,277	981	5,599
Net Pft (Pre Ex.)	9,953	5,330	6,781	5,599
Net Pft Gth (Pre-ex) (%)	(54.1)	(46.5)	27.2	(17.4)
EPS (Bt)	4.96	3.07	0.48	2.73
EPS Pre Ex. (Bt)	4.88	2.61	3.32	2.74
EPS Gth Pre Ex (%)	(54)	(46)	27	(17)
Diluted EPS (Bt)	4.96	3.07	0.48	2.73
Net DPS (Bt)	2.65	1.50	0.21	1.21
BV Per Share (Bt)	59.7	58.8	59.1	60.6
PE (X)	8.7	14.1	90.2	15.8
PE Pre Ex. (X)	8.9	16.6	13.0	15.8
P/Cash Flow (X)	4.8	6.7	9.0	14.6
EV/EBITDA (X)	4.2	8.1	8.2	10.0
Net Div Yield (%)	6.1	3.5	0.5	2.8
P/Book Value (X)	0.7	0.7	0.7	0.7
Net Debt/Equity (X)	0.0	0.4	0.7	0.9
ROAE (%)	8.3	5.2	0.8	4.6
Earnings Rev (%):			0	0
Consensus EPS (Bt):			1.25	4.10
Other Broker Recs:		B: 17	S: 5	H: 6

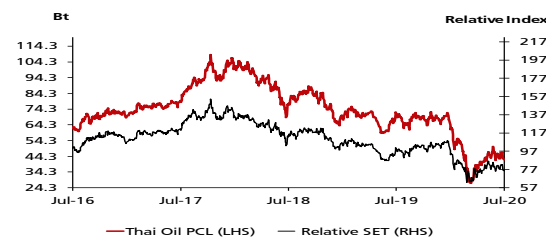
Source of all data on this page: Company, DBSVTH, Bloomberg Finance L.P.

One of the most efficient refineries in the region that aims to reduce emissions from Energy Recovery Unit (ERU) and Clean Fuel Project (CFP) projects. Thai Oil (TOP) has reduced its carbon intensity from 3.65m tCO<sub>2</sub>e in 2016 to 3.3 tCO<sub>2</sub>e in 2019. As there is no carbon tax scheme presently, most of Thailand's Oil and Gas companies have applied for Thailand Voluntary Emission Reduction Program (T-VER) that gives them carbon credits (the difference between threshold and actual emissions) which can be sold in the future. It may take up to 3 years to pass carbon tax regulations/laws legislation. Then, the Carbon Capture Report will be required and carbon tax can be applied accordingly.


Nonetheless, the implementation of carbon tax would lead to additional operating cost for TOP in the future (TOP currently has carbon tax credit on hand).

Our estimate of impact of carbon pricing is that every US\$1 per tCO<sub>2</sub>e will hurt earnings by 1.9-2.1% in FY25 – FY30. This is slightly higher than its peers in Asia due to i) our conservative earning forecast where our GRM assumption stands at US\$4/bbl, much lower than market consensus, and ii) refinery is a major business for TOP where it has highest refinery capacity (275/400 kbd in 2020 and 2024 onward). Moreover, we believe TOP is on the way to be one of the leading decarbonisation refineries as its: i) new CFP project will enhance refining efficiency and reduce fuel loss (currently 2% vs peers' 5%) as well as carbon emissions, ii) renewable power plant project, called ERU project (using petroleum pitch as feedstock, ), will supply electricity to its refining plant, and iii) new investment is in line with the new EURO5 standard that will reduce carbon emissions and 2.5PM particles into the atmosphere.

#### Price Relative



Climate-related financial disclosure

Element	Comments
Governance  	<ul style="list-style-type: none"> <li>• <b>Management regularly reviews organisational strategy</b> in the context of climate change every year under the leadership of the Board of Directors and assesses potential impact on our business through a risk management process. It also tracks corporate key performance indicators related to climate change. The energy intensity index (EII), in particular, is used to evaluate the performance of executives and employees and is reported to the board members.</li> <li>• <b>TOP's business transformation</b> is also influenced by climate change impact such as i) government policies and regulations, ii) water consumption management to prevent potential impact from water scarcity, iii) research and development initiatives, and iv) implementing projects that efficiently increase energy efficiency and reduce oil loss. TOP has also joined the Thailand Voluntary Emission Reduction Program (T-VER). In the near future, TOP will operate the Clean Fuel Project with best-in-class technologies and support research initiatives to reduce impacts to the environment and communities. For long-term growth, management's strategic direction is towards investing on new business alternatives. The 'seed the options' strategy will see TOP increasing investments in innovation and green businesses in the future.</li> </ul>



**Environmental, Social and Governance**

## Strategy

Strong

- **Aim to accelerate decarbonisation** - Extreme weather events can cause physical damage to TOP's assets, operation and reputation, which in turn, can result in reduced output, increased repair and maintenance costs, and service disruptions for customers. Thus, TOP has taken steps in decarbonizing, including power generation capacity from renewable sources, cleaner and more environmentally friendly products (EURO 5 standard of refining products).
- **Offering new services and renewable energy as part of mitigation plan:** 1) The Solar Rooftop for Sustainability Project at the Engineering Building Center to promote renewable energy consumption and greenhouse gas reduction, which is expect to be in operations by 2020; 2) the Low Emission Supporting Scheme (LESS) Project, where TOP has invested in energy conservation activities to improve energy efficiency in Thairoil Group through a total of 7 energy efficiency projects that together reduced 33,121 tCO<sub>2</sub>e of greenhouse gas emissions; 3) Thailand Voluntary Emission Reduction Program (T-VER) organised by the Thailand Greenhouse Management Organization (Public Organisation), where TOP took part with the 239-MW Combined Cycle Co-Generation Power Plant at Sriracha District, Chonburi Province of TOP SPP Company Limited, which passed the assessment process and obtained certified carbon credits for the reduction of over 327,884 tCO<sub>2</sub>e of greenhouse gas, and supports the transition to a low carbon society in the future; 4) TOP CE project which is initiated by Thairoil Group to drive a Circular Economy to support the efficiency of resource utilisation and reduce greenhouse gas emissions in all life cycle of products.
- Note that there is no carbon tax scheme in Thailand at the moment. Hence, we estimate the impact of carbon pricing - every US\$1 per tCO<sub>2</sub>e will hurt earnings by 1.9-2.1% in FY25 – FY30. The potential impact is relatively high compared with its peers in Asia due to our conservative earning forecast where our GRM assumption is US\$4/bbl, much lower than market consensus.

Risk management



- **Regulatory risk** - For the short-term strategy for 2019-2022, TOP has benchmarked energy efficiency performance with other international companies as a gap analysis exercise to identify opportunities to improve and appropriately plan for operating energy efficiency improvement projects. TOP has also controlled fuel consumption in the production process, with the aim to increase the share of consumption from fuels with lower greenhouse gas emissions compared to fuels with higher greenhouse gas emissions. In addition, it is currently in the process of considering the use of carbon pricing in its investment decision.
- **For the long-term strategy**, TOP is preparing for the Clean Fuel Project (CFP) by selecting highly efficient technologies and ceasing production in old production units. This will allow TOP to achieve significant increase in energy efficiency in its oil refinery plants. Additionally, the CFP contributes to greenhouse gas emission reductions, as it does not depend on fuel oils, which has high greenhouse gas emissions in the production processes, and can process fuel oil into products with higher values. This in effect directly reduces greenhouse gas emissions from end consumption.
- **Transition risk** - TOP has increased its share of investments in businesses that are not dependent on oil prices, and embarked on portfolio restructuring to strengthen its competitive ability. To accomplish this portfolio restructuring, TOP is currently seeking new investment opportunities, especially for specialty products, implementing the New S-Curve Project, as well as studying investment opportunities in startup businesses, which TOP may pursue through venture capital investment. It aims to invest in developing technology that increases operational efficiency, businesses and technologies that are environmentally friendly and human-oriented, and businesses and technology that will replace hydrocarbons, to ultimately secure revenue growth rates and meet Thailo Group targets.

## Metrics and targets


 Strong

- In 2019, Thaioil Group reduced greenhouse gas emissions through investing Bt28m in 15 projects to increase energy efficiency. The initiatives resulted in a total reduction of 84,265 tCO<sub>2</sub>e. TOP also continues to study the environmental impact of its refinery's key products, including conducting life cycle assessment (LCA) on them.
- **4-6% reduction in greenhouse gas emissions during 2020-2030F.** Based on its extended business extended 2018, covering core business and investment in Clean Fuel Project, TOP has set a target to reduce greenhouse gas by 4% by 2022 from business as usual scenario from baseline year 2017. The target is 6% reduction in baseline year 2023 by 2030.
- **Carbon emissions on a downtrend during 2016-2019.** TOP has been disclosing Scope 1 and 2 CO<sub>2</sub> emissions data in the past five years and further improved its disclosure by stating Scope 3 data starting in 2020. Note that Thaioil Group does not have any indirect greenhouse gas emissions (Scope 2) from generation of electricity or steam purchased externally, as none of the production units in Sriracha District, Chonburi Province depend on external energy sources. Scope 1 emissions has gradually declined during 2015-2019 by c.10%. The CO<sub>2</sub> emission of Thailand's Oil and Gas was on a downtrend in 2015-2019 with an average reading of c.6-7%.
- **Indirect Greenhouse Gas Emissions Reduction.** As for other forms of indirect greenhouse gas emissions (Scope3), the Energy and Loss Committee (E&L Committee) assesses risks, establishes action plans, and manages and monitors production and operations to reduce greenhouse gas emissions from indirect sources. Examples of initiatives led by the E&L Committee include an initiative to reduce crude oil loss during transportation of crude vessel to refinery (ocean loss), and an initiative to develop a network of oil pipelines. Both initiatives reduce greenhouse gas emissions generated from production and transportation through vehicles and vessels, respectively. Additionally, there are controls in place for greenhouse gas emissions from landfill disposals. TOP has set a target to achieve zero waste to landfills by 2020. The company also supports employees in using company vehicles in getting to work and other locations within Thaioil Group. It has standards to maintain efficiency in business travel, as implemented through its car rental contracts, carpool programmes, and employee service vans. TOP also encourages employees to use bicycles to travel to the production plant and conduct meetings through video calls instead of commuting to the meeting.

Source: Company, DBS HK

## Xinjiang Goldwind (2208 HK / 002202 CH)

### H - BUY

Last Traded Price (14 Jul 2020):HK\$7.16

Price Target 12-mth:HK\$10.00 (39.6% upside)

### A - BUY

Last Traded Price (14 Jul 2020):RMB11.26

Price Target 12-mth:RMB13.00 (15.5% upside)

#### Analyst

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Tom LI tomlil@dbs.com

#### Forecasts and Valuation

FY Dec (RMB m)	2018A	2019A	2020F	2021F
Turnover	28,590	37,878	52,116	47,793
EBITDA	5,611	4,413	7,169	8,352
Pre-tax Profit	3,682	2,561	4,802	5,269
Net Profit	3,145	2,109	4,082	4,491
Net Pft (Pre Ex) (core)	2,872	1,621	3,782	4,491
Net Profit Gth (Pre-ex) (%)	0.1	(43.5)	133.2	18.7
EPS (RMB)	0.82	0.51	0.99	1.09
EPS (HK\$)	0.91	0.57	1.10	1.21
Core EPS (HK\$)	0.83	0.44	1.02	1.21
Core EPS (RMB)	0.75	0.39	0.92	1.09
EPS Gth (%)	(1.9)	(37.8)	93.6	10.0
Core EPS Gth (%)	(6.8)	(47.6)	133.2	18.7
Diluted EPS (HK\$)	0.91	0.57	1.10	1.21
DPS (HK\$)	0.28	0.18	0.34	0.38
BV Per Share (HK\$)	7.23	8.24	9.01	9.86
PE (X)	7.9	12.6	6.5	5.9
Core PE (X)	8.6	16.4	7.0	5.9
P/Cash Flow (X)	7.9	4.5	8.3	5.6
P/Free CF (X)	nm	nm	nm	9.9
EV/EBITDA (X)	7.8	9.7	6.8	5.5
Net Div Yield (%)	3.9	2.5	4.8	5.3
P/Book Value (X)	1.0	0.9	0.8	0.7
Net Debt/Equity (X)	0.7	0.4	0.6	0.5
ROAE (%)	13.2	7.6	12.7	12.8
Earnings Rev (%)			Nil	Nil
Consensus EPS (RMB)			0.82	0.91
Other Broker Recs:	B:18	S:0	H:2	

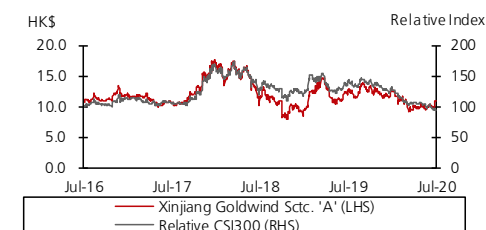
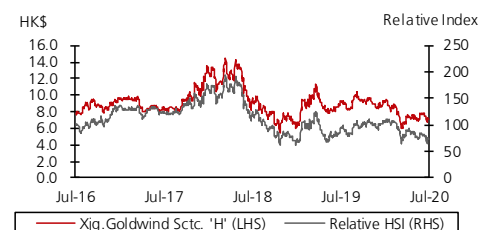
Source: Company, DBS Bank (Hong Kong) Limited ("DBS HK"), Thomson Reuters

**Playing catch-up.** Goldwind is the domestic leader in wind turbine industry. In the field of energy transition, the company enjoys opportunities arising from surging installation and market share expansion, while facing risks of extreme weather in the short term. It has been strengthening its R&D expenditure and applying advanced materials to mitigate such risks.


In terms of carbon emission reduction, Goldwind should acknowledge that it trails behind its global peers. The company has not set any target to improve emissions. Goldwind's carbon intensity increased by 23% CAGR in 2017-19 while Vestas, one of the largest global wind turbine manufacturers, registered a 17% p.a. drop. Fortunately, Goldwind has devised a plan to catch up via the following strategies: 1) utilising a higher percentage of renewable energy through its green integrated energy network – 65% in 2019 vs Vestas' 82%; 2) setting up carbon emission targets in 2021/22; 3) gradually including climate-related goals in management's KPI; 4) helping its suppliers to reduce carbon emissions via its full-life-cycle green supply chain management platform.

**FY20 earnings to double.** Wind energy installation rush in 2020 will be the largest short-term earnings driver. We expect the company to deliver 94% net profit growth driven by a 40% increase in wind turbine generator (WTG) shipments in FY20. The stock is now trading at 6x PE, -2SD below its 4-year average. The green certificate trading to be promoted in 2021 might relieve the strain from subsidies and help re-rate the stock.

#### Price Relative



Climate-related financial disclosure

Element	Comments
<p>Governance</p> 	<ul style="list-style-type: none"> <li> <p><b>Goldwind has an internal committee to discuss climate-related issues regularly</b></p> <p>Chaired by the company chairman Mr. Wu Gang, the Sustainable Development Management Committee reports to the board. This Committee comprises senior corporate managers. At the execution level, task forces are formed in different subsidiaries and departments. The Committee conducts two meetings per year and reviews goals and targets. The task forces hold irregular meetings on an ad hoc basis.</p> </li> <li> <p><b>Climate-related considerations taken in business strategy</b></p> <p>The company identified climate change as one of the top 3 ESG issues in 2019, and the Sustainable Development Management Committee ensures that environmental appeals are included in the company’s decision-making process. On the one hand, Goldwind considers global responses to climate issues as an opportunity for business development, and promotes its wind turbine products and services. On the other hand, the company is aware of the negative impact of climate change on its business and tries to mitigate such risks.</p> </li> <li> <p><b>KPI of management to be gradually linked with climate-related goals</b></p> <p>Climate-related issues are not considered in management’s KPI, but Goldwind will gradually include them in the future. The company considers environmental protection to be as important as production safety, which is now part of the management’s KPI.</p> </li> </ul>

## Strategy


 Good

- **Climate-related issues identified**

1. Natural disasters caused by climate change pose a short-term risk, but fortunately, Goldwind has prevented them by proactively analysing, identifying and evaluating various extreme weather conditions, and managing them throughout the full life cycle management process of wind power projects. The company hardly faces wind turbine malfunctions.
2. In the longer term, energy transition will be an opportunity rather than a risk to the company, which will create more business, no matter wind turbine manufacturing orders or maintenance contracts.

- **Strengthening R&D and emergency response system**

Extreme weather phenomena such as typhoons and high temperatures will give rise to an unsafe environment which might lead to wind turbine malfunctions. In order to deal with them, Goldwind has enhanced its R&D and applied high-strength, high/low temperature-resilient material in its turbines. Additionally, in the operation stage, Goldwind 1) develops its meteorological early warning and forecasting system; 2) carries out training and emergency drills for wind farm operators to improve their emergency response capabilities.

- **Climate change to raise operating expenses in the short term while boosting revenue in the long term**

1. Besides stable R&D input to maintain its industry leading position and the high quality of wind turbines, Goldwind also expects to see increasing operating costs from ESG segment as it plans to grant higher remuneration/ better incentives to the Sustainability Committee senior managers.
2. Furthermore, the company is dedicated to promoting its full-life-cycle green supply chain management platform, which helps its upstream suppliers to increase energy efficiency and reduce emissions through green energy micro-grids. 70+ suppliers are now involved, 50 of which are companies with annual consumption of more than 300 tons of standard coal. It will be a new revenue stream in the future.
3. In the long term, climate change issues will be positive to revenue in view of 1) more contracts from wind turbine and wind farm maintenance; 2) green energy contract management with upstream suppliers; 3) possible additional income from green certificate trading.

- **More active in R&D while there is still room to improve in clean energy usage**

Compared with Mingyang Smart Energy, Goldwind outperformed in sustainable R&D input – 32% of Goldwind’s employees were R&D staff while that for Mingyang was only 17% in 2019. This can help to ensure that Goldwind’s wind turbine maintains its competitiveness in the market. However, we think Goldwind can do more in environmental protection, such as raising its renewable electricity percentage, which in 2019 was 65%, lower than 82% for Vestas, its largest global competitor.

Risk  
managementStrong

- **Climate change risk is integrated into the risk management process**

Goldwind is strengthening climate risk control, and is also gradually establishing standardised climate risk management procedures. Through systematic identification, analysis, and evaluation of the risks and opportunities climate issues have brought about, the company breaks climate risks down to specific business segments and comes up with risk-control countermeasures, especially for those involving wind turbine equipment manufacturing and transportation, as well as wind farm planning, construction and operation.

- **Transition risks related to technology, reputation and supply chain is well managed**

1. Technology risk is a key challenge in the wind turbine business as customers are always pursuing equipment with lower levelized cost of energy and higher quality. Goldwind, as a leader, has strengthened its R&D capability and created a full lifecycle maintenance platform to ensure the operation quality of its wind turbines.
2. Wind power is an environmentally friendly energy source and Goldwind is also paying attention on environmental protection aspects during the installation of WTG, including cutting fewer trees and making less noise.
3. The company has been raising its suppliers' awareness on sustainable development and helping them decrease their carbon emissions through green energy micro grids. The risk of supply chain disruption can be well controlled.

- **A beneficiary of changing customer appetite and more stringent environmental policy**

1. Customers will prefer higher-quality wind turbines that can secure high utilisation hours against extreme weather, which potentially makes Goldwind a key beneficiary for its leading industry position.
2. Tightening environmental regulations is an opportunity rather than a risk to the company, as it will create more demand for wind energy and thus orders for wind turbines can also surge in the future.

**Environmental, Social and Governance****Metrics and targets**

Improving

- **A higher percentage of renewable energy consumption is required to fight against rising carbon intensity**

The company uses carbon intensity as a key metric to measure its performance in climate-related issues. CO2 emissions per thousand rose by 23% CAGR in 2017-19 as wind turbine orders surged and renewable energy percentage decreased to 65% of energy consumption in 2019 from 77% in 2017. However, Vestas, the world largest wind turbine manufacturer, delivered a 17% decrease p.a. in 2017-19 in terms of carbon intensity. Therefore, Goldwind needs to catch up in emissions reduction by utilising more renewable energy in its production.

- **Scope 1&2 emissions higher than its largest global competitor**

Goldwind disclosed its scope 1&2 carbon emissions data for 2017-19. Total emissions increased by 52% CAGR, mainly driven by a sharp increase in scope 2 emissions. Vestas controlled its scope 2 carbon emissions well in the same period with a 26% decrease p.a., which also helped total emissions to drop by 8% CAGR.

- **Expect targets to be set from 2021/22**

No target has been set yet out of prudence, but the company plans to include targets from 2021/22 onwards.

Source: Company, DBS HK



## Appendix I: Methodology

We have adopted the assessment methodology used by Transition Pathway Initiative (TPI), as well as the framework recommended by Task Force on Climate-related Financial Disclosures (TCFD), in evaluating transition risk of companies and how well-prepared these companies are for the low-carbon transition.

Established in January 2017, TPI is a global initiative led by asset owners and supported by asset managers who jointly represented more than US\$14tn assets under management and advise as of June 2019. It aims to evaluate what the transition to a low-carbon economy looks like for companies with a high impact on climate change, such as power generators, oil & gas producers, metal miners, etc. Companies are evaluated by management quality and carbon performance.

### Management quality

We evaluate the quality of a company's governance and management of their greenhouse gas emissions and of risk and opportunities related to the low-carbon transition through 19 questions / indicators (see Appendix II). The results are then ranked on five levels, with level 0 having the least and level 4 having the highest acknowledgement of climate change as a business issue. The assessment is based on the information disclosed in the latest sustainability or social responsibility report.

### Carbon performance

We evaluate carbon performance of stocks under our coverage in the energy sector by comparing carbon intensity. For oil & gas exploration and coal mining companies, the majority of emissions come from use of products sold by these companies i.e. burning oil and gas to provide energy for buildings, electricity generation, transportation, etc. Thus, emissions from use of products sold is also included in the measurement of carbon intensity. Thus, the calculation includes emissions under scope 1, 2 and 3 (use of products sold) emissions from energy products sold externally in units of grams of CO<sub>2</sub> equivalent (gCO<sub>2</sub>e) per mega joule (MJ).

Energy products sold externally include sales of primary, unrefined products (such as crude oil, natural gas), refined products, and physically traded products. Products for non-energy use are excluded. We have also assumed that around 10% of oil production is destined for non-energy outputs, such as plastics and petrochemicals; hence adjustment are made in the calculation. The objective is to only measure emissions from energy products sold externally.

All energy produced by products sold are converted into a unit of energy measured in joules, using net calorific values prepared by Intergovernmental Panel on Climate Change for each energy product category.

For power generation companies, the measurement of carbon intensity is under scope 1 and 2 emissions in terms of units of grams of CO<sub>2</sub> equivalent (gCO<sub>2</sub>e) per kilowatt-hour (kWh). Emissions from use of products sold are not calculated because emissions from the source of fuel is already accounted for in scope 1 and 2 disclosures.

## Stock profile

The discussion in the stock profiles is based on the framework recommended by TCFD, which was established by Financial Stability Board to develop recommendations for more effective climate-related disclosures that could promote more informed investments or credit decisions. This will also enable stakeholders to understand better the concentrations of carbon-related assets in the financial sector. The four areas structured in the framework represent core elements of how companies operate:

- Governance: the company's governance around climate-related risks and opportunities;
- Strategy: the actual and potential impacts of climate-related risks and opportunities on the company's businesses, strategy and financial planning;
- Risk management: the processes used by a company to identify, assess and manage climate-related risks;
- Metrics and targets: the metrics and targets used to assess and manage relevant climate-related risks and opportunities.

## Recommended disclosure

### Governance:

- Describe the board's oversight of climate-related risks and opportunities;
- Describe management's role in assessing and managing climate-related risks and opportunities.

### Strategy

- Describe the climate-related risk and opportunities the company has identified over the short, medium and long term;
- Describe the impact of climate-related risks and opportunities on the company's businesses, strategy and financial planning
- Describe the resilience of the company's strategy, taking into consideration different climate-related scenarios, including a 2 degrees Celsius or lower scenario.

### Risk management

- Describe the company's processes for identifying and assessing climate-related risks;
- Describe the company's processes for managing climate-related risks;
- Describe how processes for identifying, assessing and managing climate-related risks are integrated into the company's overall risk management.

### Metrics and targets

- Disclose the metrics used by the company to assess climate-related risks and opportunities in line with its strategy and risk management process;
- Disclose scope 1, scope 2, and if appropriate, scope 3 greenhouse gas emissions, and the related risks;
- Describe the targets used by the company to manage climate-related risks and opportunities and performance against targets.

Source: Transition Pathway Initiatives

## Appendix II: Details of assessment results on management quality

## Assessment results of Hong Kong stocks

	Question	Xinjiang Goldwind	Longyuan Power	Xinyi Solar	CLP	Power Assets	Huaneng Power	CR Power	Sinopec Corp	Sinopec Shanghai Petrochemical	PetroChina	CNOOC
Level 0	1 Does the company acknowledge climate change as a significant issue for the business?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Level 1	2 Does the company recognise climate change as a relevant risk and/or opportunity for the business?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	3 Does the company have a policy (or equivalent) commitment to action on climate change?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Level 2	4 Has the company set greenhouse gas emission reduction targets?	No	No	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes
	5 Has the company published information on its operational (Scope 1 and 2) greenhouse gas emissions?	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Level 3	6 Has the company nominated a board member or board committee with explicit responsibility for oversight of the climate change policy?	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
	7 Has the company set quantitative targets for reducing its greenhouse gas emissions?	No	No	No	Yes	No	No	No	Yes	No	Yes	Yes
	8 Does the company report on Scope 3 emissions?	No	No	No	Yes	No	No	No	No	No	No	No
	9 Has the company had its operational (Scope 1 and/or 2) greenhouse gas emissions data verified?	No	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	10 Does the company support domestic and international efforts to mitigate climate change?	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	11 Does the company disclose its membership and involvement in trade associations engaged in climate issues?	Yes	Yes	No	Yes	No	Yes	No	No	No	Yes	Yes
	12 Does the company have a process to manage climate-related risks?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Level 4	13 Does the company disclose materially important Scope 3 emissions?	No	No	No	Yes	No	No	No	No	No	No	No
	14 Has the company set long-term quantitative targets for reducing its greenhouse gas emissions?	No	No	No	Yes	No	No	No	No	No	No	No
	15 Does the company's remuneration for senior executives incorporate climate change performance?	No	No	No	Yes	No	No	No	Yes	No	No	No
Level 4	16 Does the company incorporate climate change risks and opportunities in their strategy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	17 Does the company undertake climate scenario planning?	No	No	No	Yes	No	No	No	No	No	No	No
	18 Does the company disclose an internal price of carbon?	No	No	No	No	No	No	No	No	No	No	No
	19 Does the company ensure consistency between its climate change policy and the positions taken by trade associations of which it is a member?	No	No	No	No	No	No	No	No	No	No	No

Source: Companies, DBS

**Assessment results of Indonesia stocks**

	Question	Adaro Energy	Bukit Asam	Indo Tambang Raya	Perusahaan Gas	Medco Energi	United Tractors
Level 0	1 Does the company acknowledge climate change as a significant issue for the business?	Yes	Yes	Yes	Yes	Yes	Yes
Level 1	2 Does the company recognise climate change as a relevant risk and/or opportunity for the business?	Yes	Yes	Yes	Yes	Yes	Yes
	3 Does the company have a policy (or equivalent) commitment to action on climate change?	Yes	Yes	Yes	Yes	Yes	Yes
Level 2	4 Has the company set greenhouse gas emission reduction targets?	Yes	Yes	Yes	Yes	Yes	Yes
	5 Has the company published information on its operational (Scope 1 and 2) greenhouse gas emissions?	Yes	Yes	Yes	Yes	No	No
Level 3	6 Has the company nominated a board member or board committee with explicit responsibility for oversight of the climate change policy?	Yes	Yes	Yes	Yes	Yes	Yes
	7 Has the company set quantitative targets for reducing its greenhouse gas emissions?	Yes	Yes	Yes	Yes	Yes	Yes
	8 Does the company report on Scope 3 emissions?	No	No	No	Yes	No	No
	9 Has the company had its operational (Scope 1 and/or 2) greenhouse gas emissions data verified?	Yes	Yes	Yes	Yes	Yes	Yes
	10 Does the company support domestic and international efforts to mitigate climate change?	Yes	Yes	Yes	Yes	Yes	Yes
	11 Does the company disclose its membership and involvement in trade associations engaged in climate issues?	Yes	Yes	Yes	Yes	Yes	Yes
	12 Does the company have a process to manage climate-related risks?	No	Yes	Yes	Yes	Yes	Yes
Level 4	13 Does the company disclose materially important Scope 3 emissions?	No	No	No	Yes	No	No
	14 Has the company set long-term quantitative targets for reducing its greenhouse gas emissions?	No	No	No	No	No	No
	15 Does the company's remuneration for senior executives incorporate climate change performance?	No	No	No	No	No	No
Level 4	16 Does the company incorporate climate change risks and opportunities in their strategy?	No	No	No	No	Yes	No
	17 Does the company undertake climate scenario planning?	No	No	No	No	Yes	No
	18 Does the company disclose an internal price of carbon?	No	No	No	No	No	No
	19 Does the company ensure consistency between its climate change policy and the positions taken by trade associations of which it is a member?	No	No	No	No	No	No

Source: Companies, DBS

Assessment results of Malaysia stocks

	Question	Petronas		YTL Power	Sapura	
		Gas	Tenaga		Energy	Hibiscus
Level 0	1 Does the company acknowledge climate change as a significant issue for the business?	Yes	Yes	Yes	Yes	Yes
Level 1	2 Does the company recognise climate change as a relevant risk and/or opportunity for the business?	No	No	No	Yes	Yes
	3 Does the company have a policy (or equivalent) commitment to action on climate change?	Yes	Yes	Yes	Yes	Yes
Level 2	4 Has the company set greenhouse gas emission reduction targets?	No	No	No	No	No
	5 Has the company published information on its operational (Scope 1 and 2) greenhouse gas emissions?	No	Yes	Yes	No	Yes
	6 Has the company nominated a board member or board committee with explicit responsibility for oversight of the climate change policy?	Yes	Yes	Yes	Yes	Yes
	7 Has the company set quantitative targets for reducing its greenhouse gas emissions?	No	No	No	No	No
Level 3	8 Does the company report on Scope 3 emissions?	No	No	Yes	No	No
	9 Has the company had its operational (Scope 1 and/or 2) greenhouse gas emissions data verified?	No	No	No	No	Yes
	10 Does the company support domestic and international efforts to mitigate climate change?	No	No	No	Yes	Yes
	11 Does the company disclose its membership and involvement in trade associations engaged in climate issues?	No	No	No	Yes	Yes
	12 Does the company have a process to manage climate-related risks?	No	No	No	No	No
	13 Does the company disclose materially important Scope 3 emissions?	No	No	No	No	No
Level 4	14 Has the company set long-term quantitative targets for reducing its greenhouse gas emissions?	No	No	No	No	No
	15 Does the company's remuneration for senior executives incorporate climate change performance?	No	No	No	No	No
	16 Does the company incorporate climate change risks and opportunities in their strategy?	No	Yes	No	No	No
	17 Does the company undertake climate scenario planning?	No	No	No	No	No
	18 Does the company disclose an internal price of carbon?	No	No	No	No	Yes
	19 Does the company ensure consistency between its climate change policy and the positions taken by trade associations of which it is a member?	No	No	No	No	Yes

Source: Companies, DBS

Assessment results of Thailand stocks

	Question	Bangchak Corporation	IRPC	Global Power Synergy	PTT Exploration and Production	PTT PCL	Star Petroleum Refining	Thai Oil PCL
Level 0	1 Does the company acknowledge climate change as a significant issue for the business?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Level 1	2 Does the company recognise climate change as a relevant risk and/or opportunity for the business?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	3 Does the company have a policy (or equivalent) commitment to action on climate change?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Level 2	4 Has the company set greenhouse gas emission reduction targets?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	5 Has the company published information on its operational (Scope 1 and 2) greenhouse gas emissions?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Level 3	6 Has the company nominated a board member or board committee with explicit responsibility for oversight of the climate change policy?	No	No	Yes	No	No	No	No
	7 Has the company set quantitative targets for reducing its greenhouse gas emissions?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	8 Does the company report on Scope 3 emissions?	No	No	Yes	Yes	Yes	No	No
	9 Has the company had its operational (Scope 1 and/or 2) greenhouse gas emissions data verified?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	10 Does the company support domestic and international efforts to mitigate climate change?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	11 Does the company disclose its membership and involvement in trade associations engaged in climate issues?	No	No	No	No	No	No	Yes
	12 Does the company have a process to manage climate-related risks?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Level 4	13 Does the company disclose materially important Scope 3 emissions?	No	No	Yes	Yes	Yes	No	No
	14 Has the company set long-term quantitative targets for reducing its greenhouse gas emissions?	No	Yes	Yes	Yes	Yes	Yes	Yes
	15 Does the company's remuneration for senior executives incorporate climate change performance?	No	No	No	No	No	No	No
Level 4	16 Does the company incorporate climate change risks and opportunities in their strategy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	17 Does the company undertake climate scenario planning?	No	No	No	No	No	No	No
	18 Does the company disclose an internal price of carbon?	No	No	No	No	Yes	No	No
	19 Does the company ensure consistency between its climate change policy and the positions taken by trade associations of which it is a member?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Companies, DBS

## Appendix III: Regional regulations on climate-related financial disclosure

### Regional regulations on climate-related financial disclosure

Country	Regulations on climate-related financial disclosure
China	<p>From end-2017 onwards:</p> <ul style="list-style-type: none"> <li>MUST disclose: environmental information such as 1) info on pollutant emissions; 2) construction and operation of pollution prevention facilities and self-monitoring programs; 3) emergency plans for environmental issues of "key pollutant-discharging entities" listed out by Ministry of Ecology and Environment (MEE).</li> <li>Comply or Explain: abovementioned environmental info for other companies not in MEE's list.</li> </ul> <p>From end-2020 onwards:</p> <ul style="list-style-type: none"> <li>More detailed environmental disclosure for all A-share companies is expected to be compulsory.</li> </ul>
Hong Kong	<p>From July 2020 onwards:</p> <ul style="list-style-type: none"> <li>MUST disclose: 1) Board's oversight of environmental issues including evaluation process and management strategy; 2) information on standards, methodologies, assumptions and/or calculation tools and the source of conversion factors used, for reporting emissions/energy consumption.</li> <li>Comply or Explain: 1) pollutant emissions data and policies; 2) efficiency in the use of natural resources; 3) climate-related risk identification, mitigation, and potential impact.</li> </ul>
Indonesia	<p>From Jan 2019 onwards:</p> <ul style="list-style-type: none"> <li>All commercial banks MUST disclose its sustainability strategy, governance and performance. The environmental data MUST contain the performance in the past three years for 1) energy consumption; 2) emissions reduction achieved; 3) reduction of waste and effluent; 4) biodiversity conversion.</li> </ul> <p>From Jan 2020 onwards:</p> <ul style="list-style-type: none"> <li>All issuers MUST comply to the disclosure requirements mentioned above.</li> </ul>
Malaysia	<p>From end-2017 onwards:</p> <ul style="list-style-type: none"> <li>Main market listed issuers MUST disclose: 1) the governance structure to manage environmental risks and opportunities; 2) identification of material sustainability matters, the impact, policies &amp; actions to manage them, and indicators to demonstrate the performance of issuers in managing these sustainability matters.</li> <li>Stock Exchange of Malaysia is officially committed to promoting the TCFD Recommendations and strongly recommends listed companies to take them as reference when preparing the sustainability statement.</li> </ul>
Singapore	<p>From 2018 onwards:</p> <ul style="list-style-type: none"> <li>Comply or Explain: 1) identification of material environmental factors (materials, energy, emissions) and policies &amp; practices related to the factors; 2) targets and performance; 3) board statement to include sustainability issues into the strategy of the company, etc.</li> <li>SGX does not as of now require listed companies to report on climate change and its impact on business. But some companies may include climate change if its impact is material to their businesses.</li> </ul>
Thailand	<p>From end-2021 onwards:</p> <ul style="list-style-type: none"> <li>All listed companies MUST disclose their carbon emissions in their "One Report", which will address their commitment in incorporating sustainability issues into their business practices.</li> </ul>

Source: CSRC, HKEx, SGX, Bursa Malaysia, Indonesian FSA, Thailand SEC

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**BUY** (>15% total return over the next 12 months for small caps, >10% for large caps)

**HOLD** (-10% to +15% total return over the next 12 months for small caps, -10% to +10% for large caps)

**FULLY VALUED** (negative total return, i.e., > -10% over the next 12 months)

**SELL** (negative total return of > -20% over the next 3 months, with identifiable share price catalysts within this time frame)

*\*Share price appreciation + dividends*

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