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ENERGY

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IMO-2020 can be a 'lucky break' for FO IPPs

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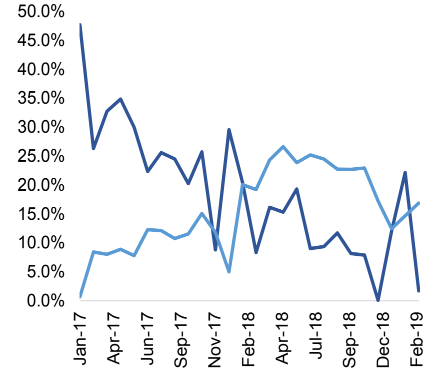
- **IMO regulations (see box) limiting oil-based maritime sulphur fuel emissions are expected to rattle global refined fuels markets, where bottom of the barrel/black oil product (HSFO) is to be replaced by middle distillates globally**
- **Depreciative impact of the same can be seen in stifled demand for HSFO, reflected in futures prices, where an extrapolation of recent Brent/FO cracks indicates weakness in this product segment (CY20 crack to US$65/bbl Brent averages US$-13.8/bbl vs. US$-9.6/bbl seen during CY18)**
- **Contrasting costs of generation on RFO with recently prominent RLNG based generation, we highlight the role of crack spreads in moving their relative cost of generation, where both fuel elements are pegged to crude benchmarks (in terms of long term supply agreements for RLNG) and FX variations**
- **Mentioning possible caveats to our assumptions, we believe older IPPs (with the majority completing their tariff period over the next decade) could be key beneficiaries of cratering HSFO prices if HSFO/Brent negative cracks of US$~18/bbl are hit, making cost of generation comparable (keeping Brent and US$/PkR rates equal)**
- **Based on these fundamentals, we believe CY20 is lining up to be a year of major upheaval, where two emerging trends in the power chain, i.e. the rise of RLNG based generation and RFO's demise, may be moderated. Nevertheless, HUBC remains our top-pick in the space with its multi-project status and exposure to multiple fuel sources key to a reduced risk profile.**

MARPOL Convention (established in 1973 by International Maritime Organization (IMO)), a series of measures to prevent pollution from marine and shipping operations, was modified in 1997 to address sulphur emissions from ships by introducing a global cap on the sulphur content of marine fuel oil. After reducing the sulphur cap over the years, MARPOL 2020 is a next step to reduce sulphur content to 0.5% from Jan-20 vs. current 3.5%.

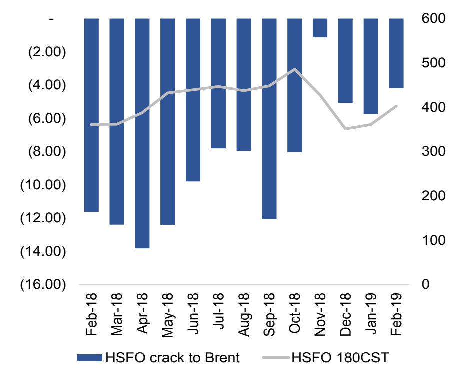
IMO's regulations to muddy the waters: The International Maritime Organization (IMO) is implementing its toughest oil-based sulphur emissions standards yet, starting Jan'20 and applicable on ~90% of the global maritime bunker market, mandating a reduction in the current limit of bunker fuel to 0.5% sulphur content. With ~70% of current bunker fuels being HSFO (3.5% sulphur content), major displacement in global refined fuel demand is expected with the marine fuel landscape altered significantly, demand for HSFO is expected to crater (as expensive scrubbers will have to be installed), replaced by Marine Gasoil (HSD variant, 0.1% sulphur), Very low Sulphur furnace oil (0.5%), indicated by futures prices for HSFO in strong backwardation.

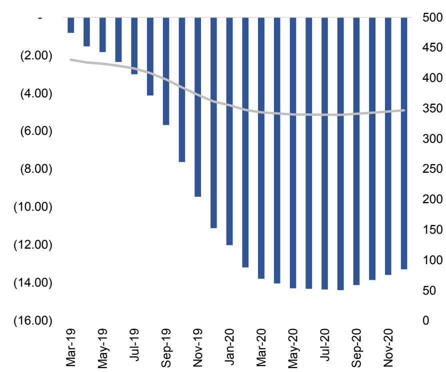
RFOs share in power mix declining as RLNG take up the mantle



Source: CPPA & AKD Research

HSFO prices and Brent cracks took a dive during CY18….. ….with futures indicating continued declines





Source: OGRA, NYMEX & AKD Research

RLNG triumphs on cost of generation, but for how long: At home, possible repercussions of these regulations are: 1) lower RFO prices as indicated by commodity futures for deliveries in CY20, where our assumption of US$65/bbl Brent translated to average annual crack of negative US$13.77/bbl vs. negative US$9.64/bbl seen in CY18, and 2) FO-lite power sector dynamics where thermal power base has shifted to favor RLNG (PkR3/KwH or ~24% cheaper than FO),

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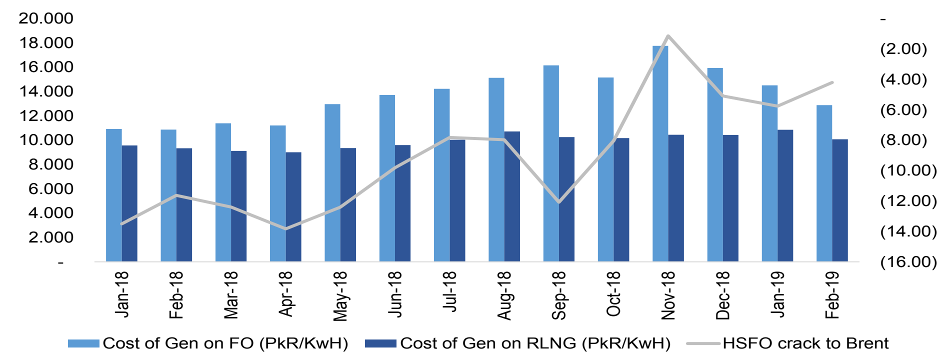
although both are priced relative to crude benchmarks and their landed costs are marred by FX swings. Over the last year, comparing cost of generation on RFO vs. RLNG, we contrast relative cost of generation with RFO/Brent cracks highlighted as the major variable moving the needle on cost of generation between the two thermal fuel sources.

Outlook: Based on these fundamentals, we believe CY20 is lining up to be a year of major upheaval, where the two major trends in the power chain, i.e. the rise of RLNG based generation and RFO's demise, may be moderated. As both RFO and RLNG pricing are based on similar underlying variables (although RLNG price setting is increasingly decoupling from Crude benchmarks), long term pricing dynamics for both are expected to imitate these trends. That said, we believe wider trends in global RLNG dynamics are likely to favor RLNG based generation, with the PTI-led government seeking to formalize import mechanism for low priced spot shipments or negotiate RLNG supply agreement benchmarks (below the 13.37% slope in place for the 15yr Qatar agreement), going forward. Additionally, RLNG generation additions are fully operational, with CY19 as their first full year of operations, where we expect higher load factors from RLNG, translating to improved thermal efficiency (touching 62% in some cases), lower cost of generation further.

Relative cost of generation on RFO vs. RLNG (LHS) with HSFO Brent Cracks (RHS)



Source: OGRA, CPPAG & AKD Research

Investment Perspective: We believe older IPPs (with the majority completing their tariff period over the next decade) could be key beneficiaries of cratering HSFO prices if HSFO/Brent negative cracks of US$~18/bbl are hit, making cost of generation at or near par (keeping Brent and US$/PkR rates equal). To recall, current HSFO futures prices for CY20 (average of US$343.57/mt) at an assumed Brent price of US$65/bbl translate to average crack spreads of US$-13.77/bbl. Based on our working a further US$3-4/bbl widening of this negative spread would keep RFO based generation feasible over the long run (assuming 40/60% thermal efficiency for FO/RLNG). Post 2002 power policy IPPs, with the majority being commissioned around CY10 could also benefit from cratering HSFO prices as they are relatively more efficient, have considerable period of time remaining in their tariffs, and are higher up the merit order list. Nevertheless, HUBC remains our top-pick in the space with its multi-project status and exposure to multiple fuel sources key to a reduced risk profile.

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Sell	**< 13% expected total return (Rf: 13%)**

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Buy	**> 20% upside potential**
Accumulate	**> 5% to < 20% upside potential**
Neutral	**< 5% to > -5% potential**
Reduce	**< -5% to > -20% downside potential**
Sell	**< -20% downside potential**
Not Rated	**No investment opinion or recommendation**

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