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Future Fuels Survey

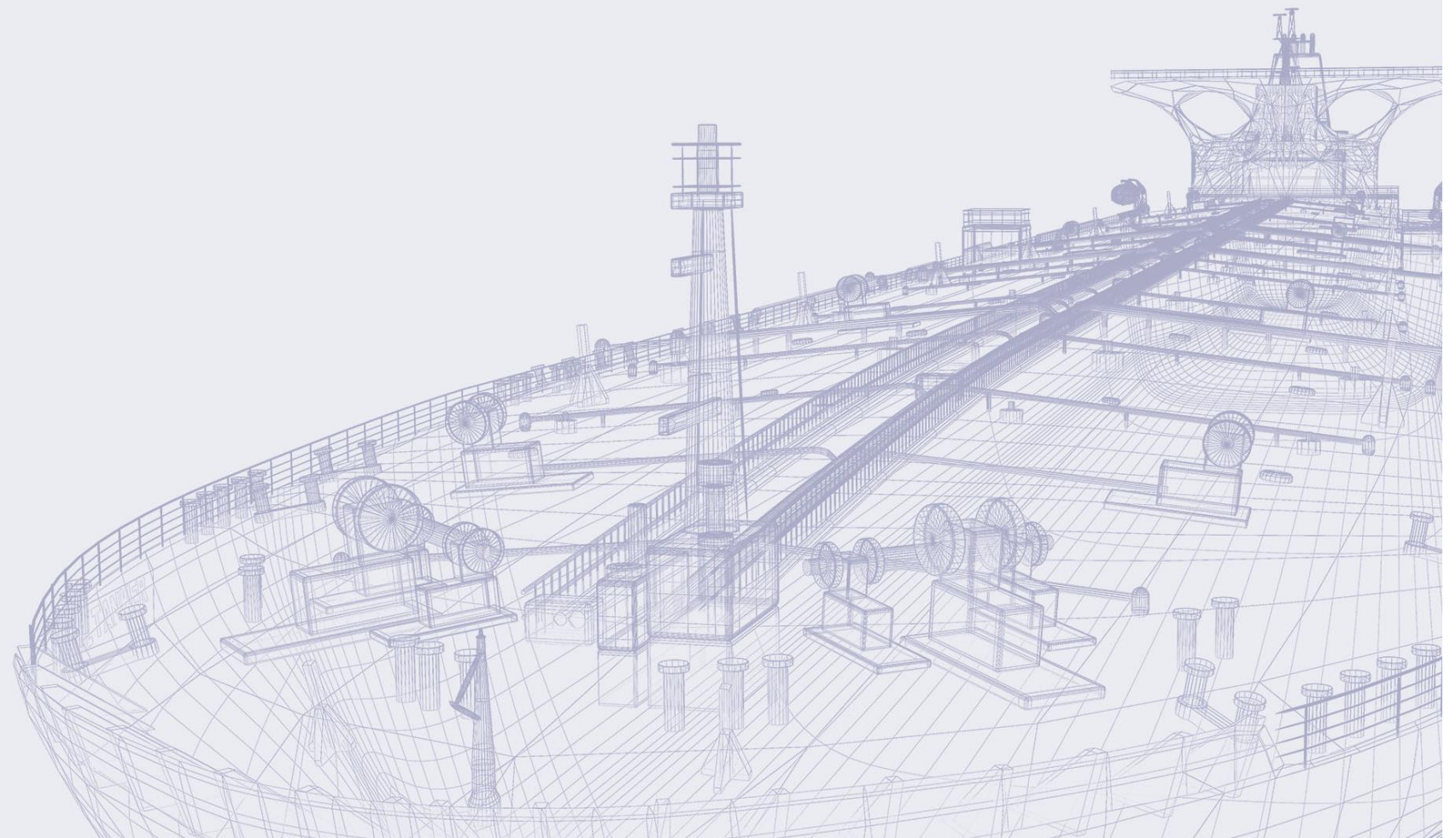
January 2021



Introduction

- Following on from the successes of our previous Low Sulphur Surveys (starting in December 2017), Galbraiths Research has commissioned yet another survey of market participants. This time, the focus is on the markets perception and planning of future fuels, however we have also briefly reviewed the usage of exhaust gas cleaning systems.
- For this purpose, we have yet again created two separate surveys, one for owners and one for charterers with 11 and 10 questions respectively. These surveys were released during November and December 2020 to participants and we have had the highest participation of any survey thus far. We would like to take this opportunity to thank everybody who took the time to complete the surveys.
- The results to these answers have now been collated and analysed and over the next few slides, we have collated the findings of each of the surveys, highlighting the key points of interest and, where possible, comparing the differences in opinion between owners and charterer / refiners and the differences in responses since our previous surveys.
- A full list of the questions that were included in our 1st Future Fuels Survey can be found on Page 13.
- Should you wish to review the previous LS Surveys for yourself, then please do send us an email at 'research@galbraiths.co.uk' and we will gladly send you the previous versions. **Equally, should you have any comments or suggestions, we would be more than pleased to hear from you.**

Focus On: Scrubbers



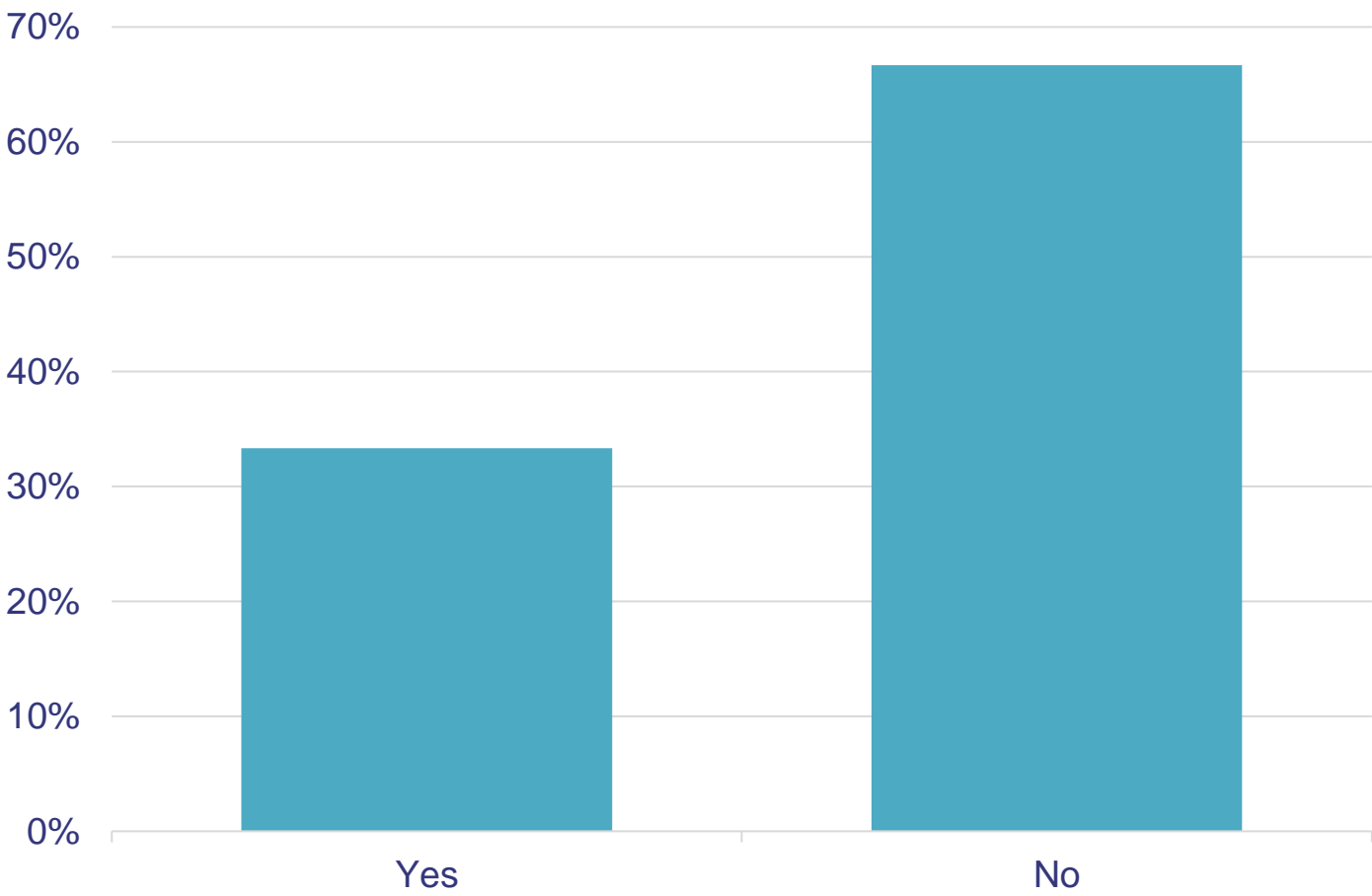
Scrubber Viability

Do you feel that scrubbers are still a viable investment, bearing in mind the availability of sufficient compliant fuel?



The collapse in oil prices have seen the spreads between HSFO and compliant fuels narrow substantially, reducing the savings from running a scrubber and increasing the payback period substantially. In this environment, it is unsurprising that only 16% of owners and 22% of charterers/refiners see scrubbers as a still viable investment.

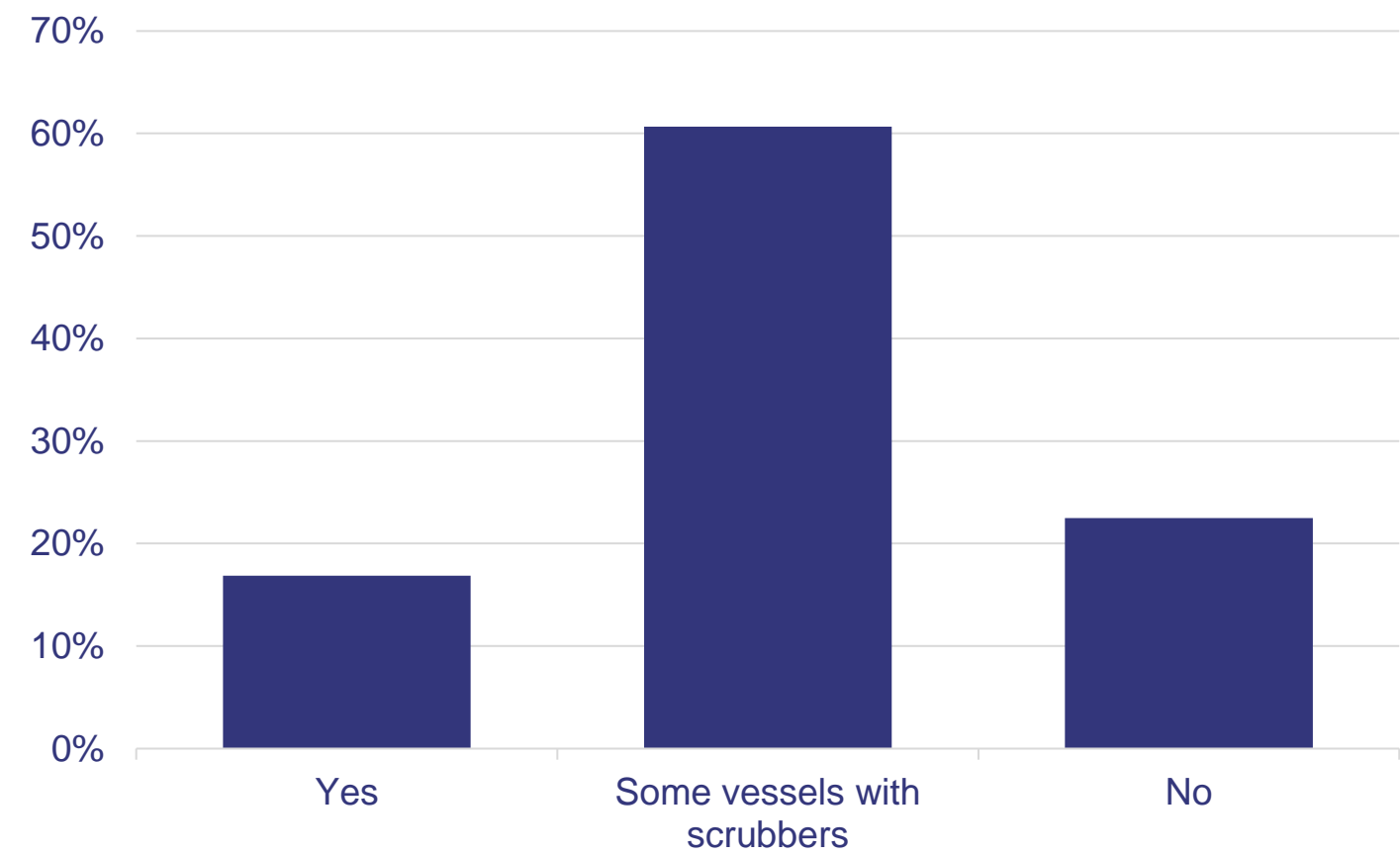
Charterers/Refiners: Has your company fixed vessels on timecharter with scrubbers installed?



The vast majority of charterers/refiners have also not been involved in timecharters with scrubber fitted vessels, a trend likely to continue as the benefits of being scrubber fitted remain negligible.

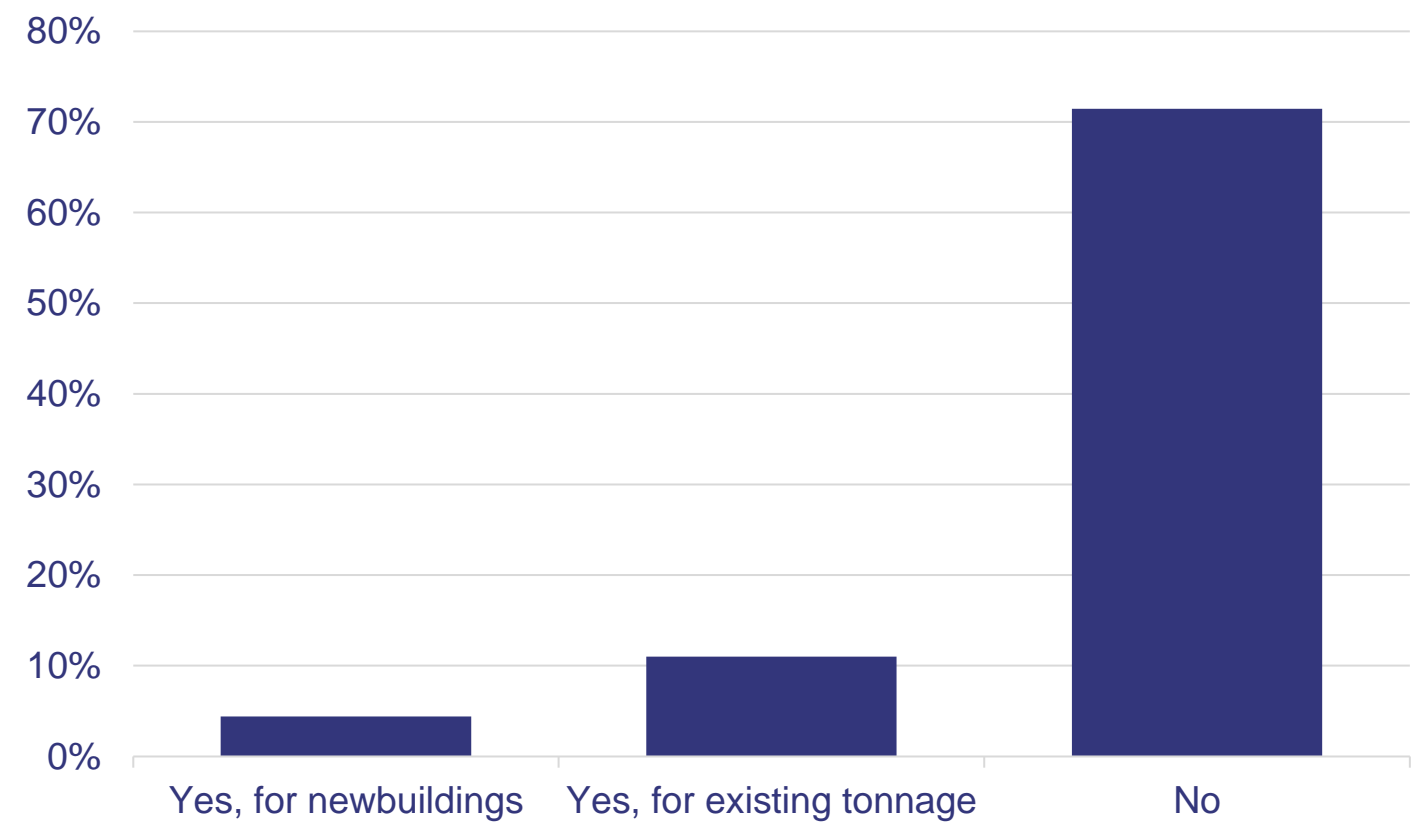
Owners: Scrubber Investment

Does your fleet have scrubbers installed on trading or on order vessels?



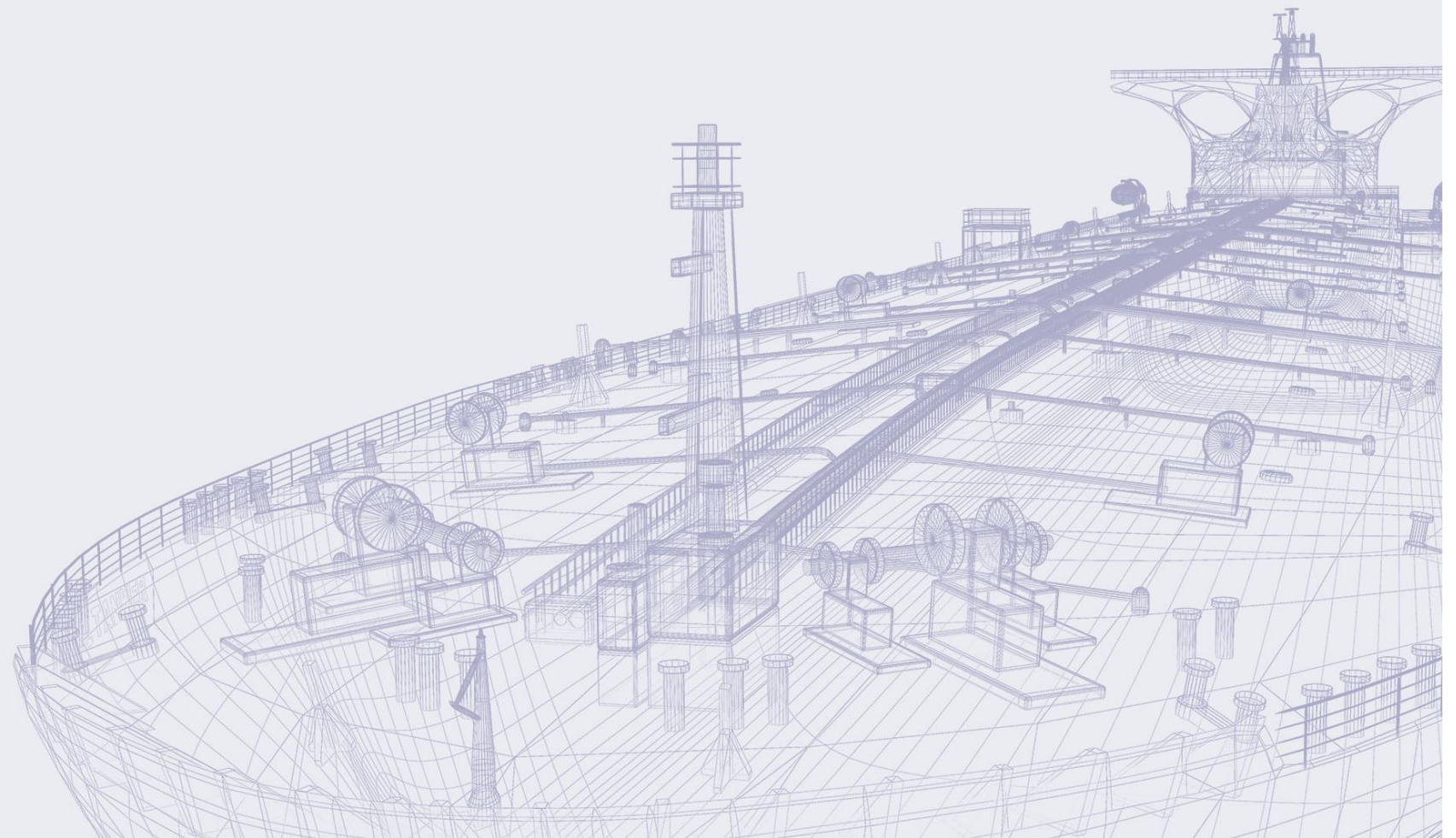
Only a small percentage (22%) of the owners involved in the survey had not fitted scrubbers to any of their fleet, either on order or trading. The vast majority had fitted scrubbers on at least some of their fleets.

Is your company investigating the installation of scrubbers going forward?

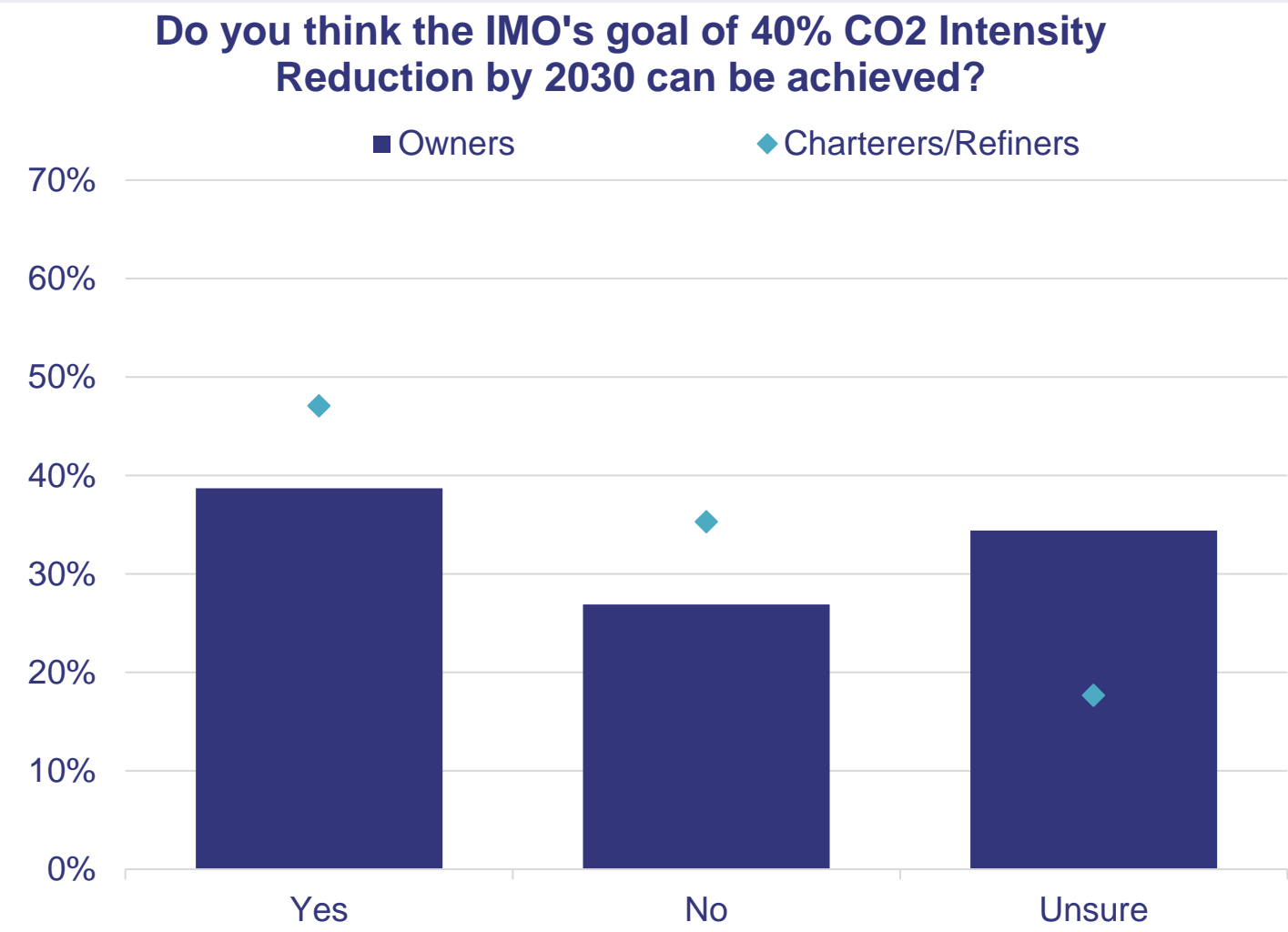


Given the factors already discussed regarding scrubbers, it perhaps comes as no great surprise that the majority of owners (71%) are no longer looking at investing in scrubbers, with only 4% still investing in the technology for some newbuildings and around 11% investing on some existing tonnage.

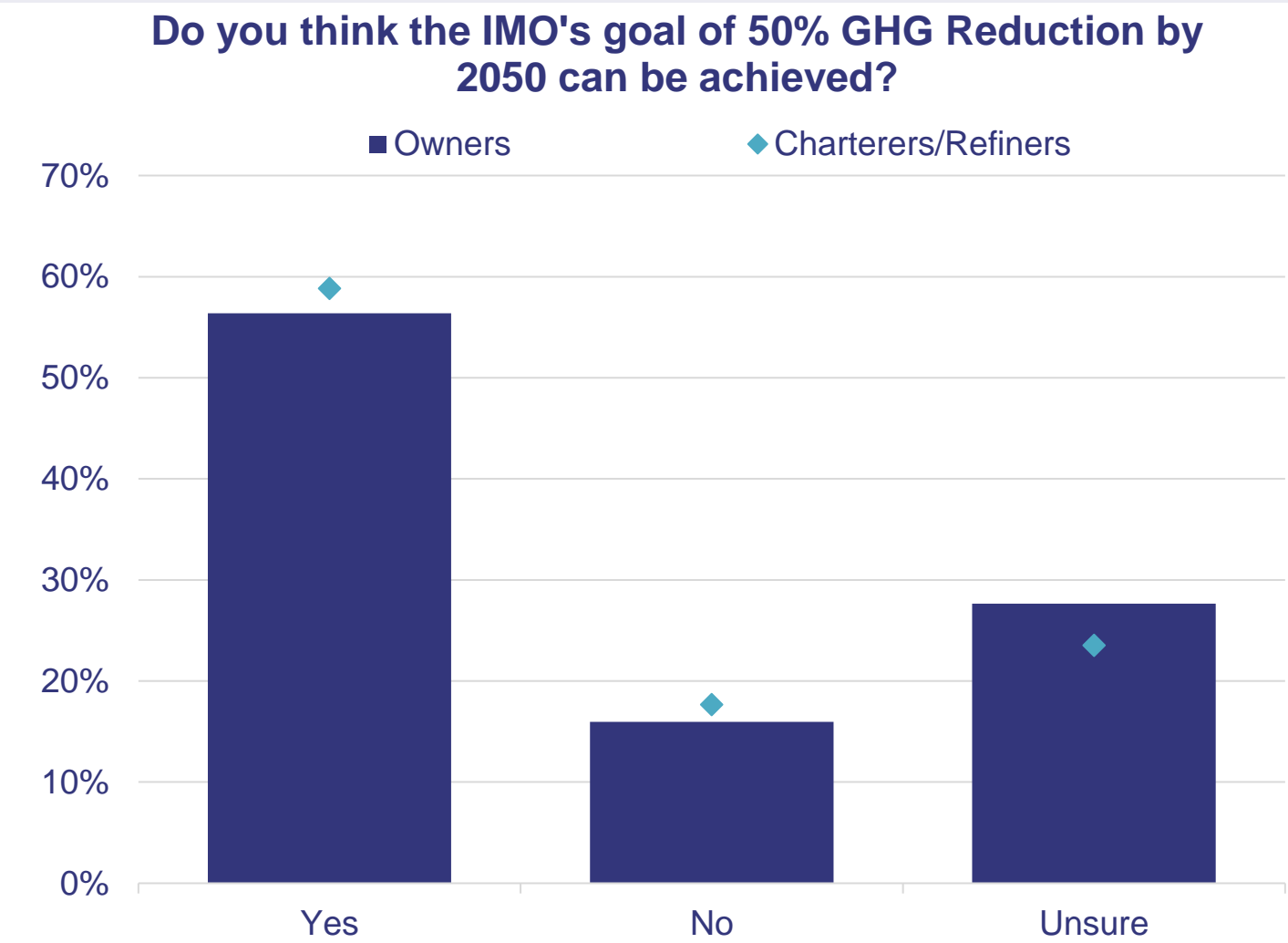
Focus On: Future Fuels



IMO 2030 & IMO 2050 Targets



Optimism is in reasonably short supply, when it comes to meeting the IMO’s 40% carbon intensity reduction target by 2030, with just shy of 39% of owners expecting this to be possible compared to about 47% of charterers/refiners. Just over a quarter of owners and a third of charterers/refiners do not expect such a target to be reachable, with the remainder unsure, hardly a glowing endorsement of the near future in terms of emissions reduction.



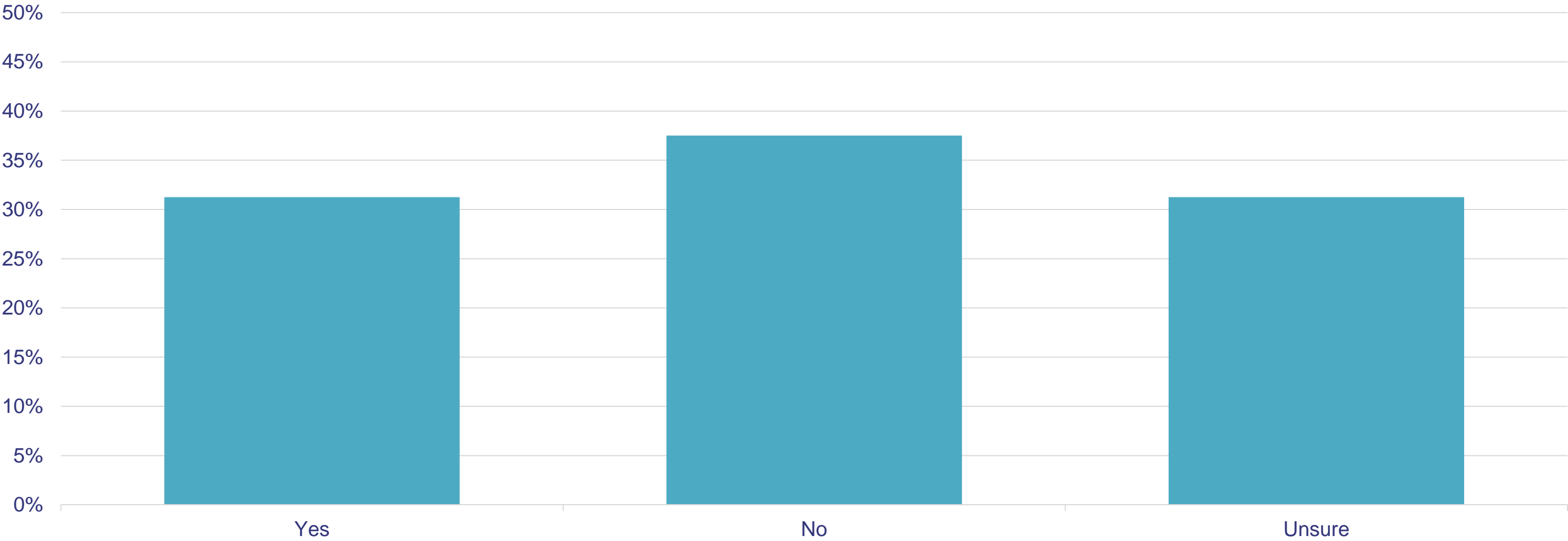
A more positive picture is painted in relation to the longer term IMO 2050 targets, with the majority of both owners (56%) and charterers/refiners (59%) expecting these targets to be met. Only 16% of owners and 18% of charterers/refiners definitively do not expect these levels to be achieved, perhaps a reflection of the confidence in alternative fuels in the longer term, which is examined in subsequent slides.

What do you feel are the biggest challenges in meeting future IMO GHG targets?



With so many survey participants expecting difficulties in reaching the IMO 2030 & 2050 targets it is helpful to explore the main challenges respondents expect to face in meeting the targets. The responses have been varied as seen on the chart. For owners it is the ‘Immature Alternative Fuels Technology’ that is their main concern, with around 28% of respondents, likely to be particularly the case for the 2030 target. On the charterers/refiners’ responses there is much alignment with owners’ responses, although notably expecting ‘Infrastructure Constraints’ to present greater challenges than any other issue. As technology continues to develop and more research is undertaken on future fuels, it will be interesting to see how this picture develops going forward.

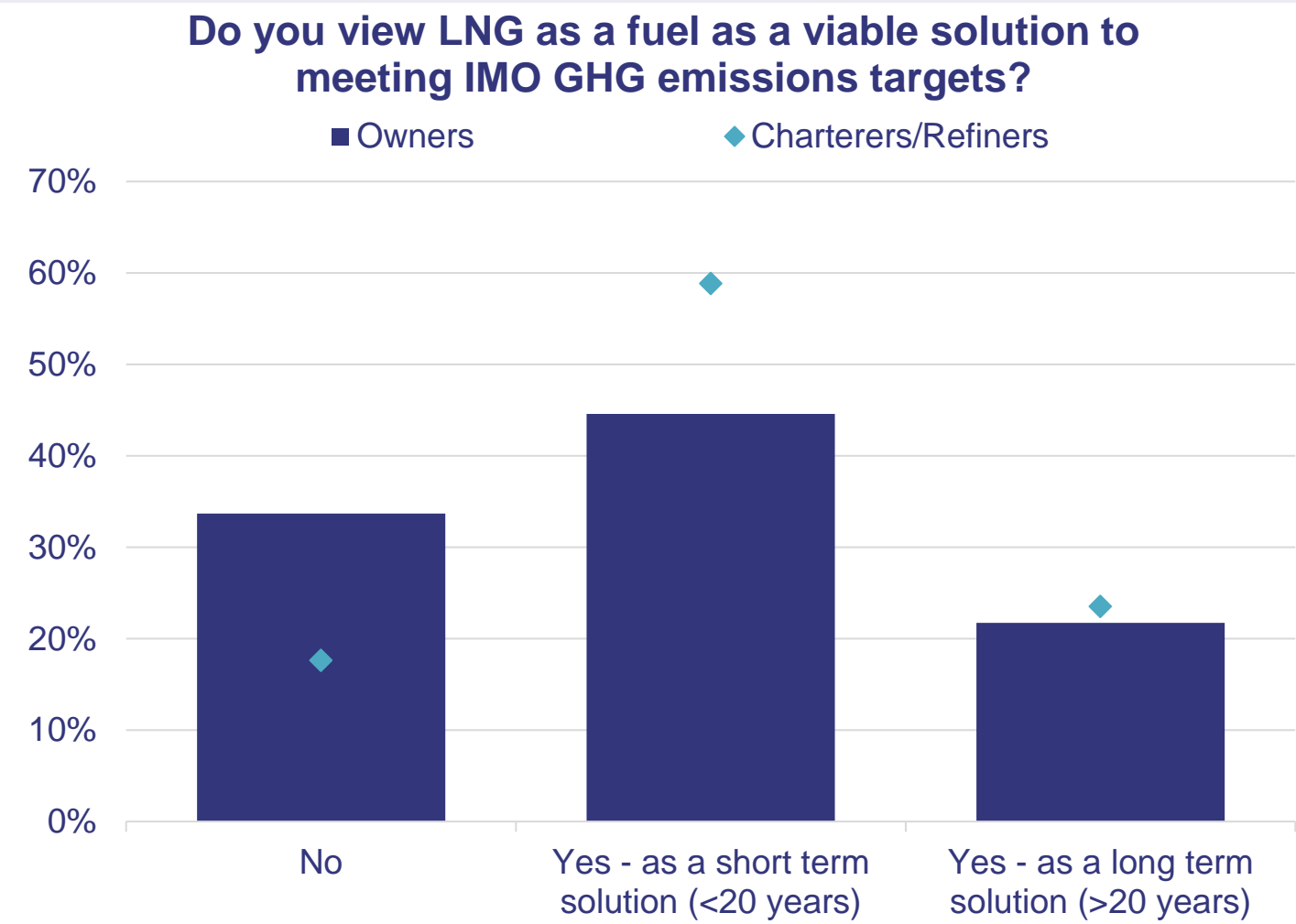
Charterers/Refiners: Do you feel there is currently a feasible solution for owners in order to meet the future GHG targets?



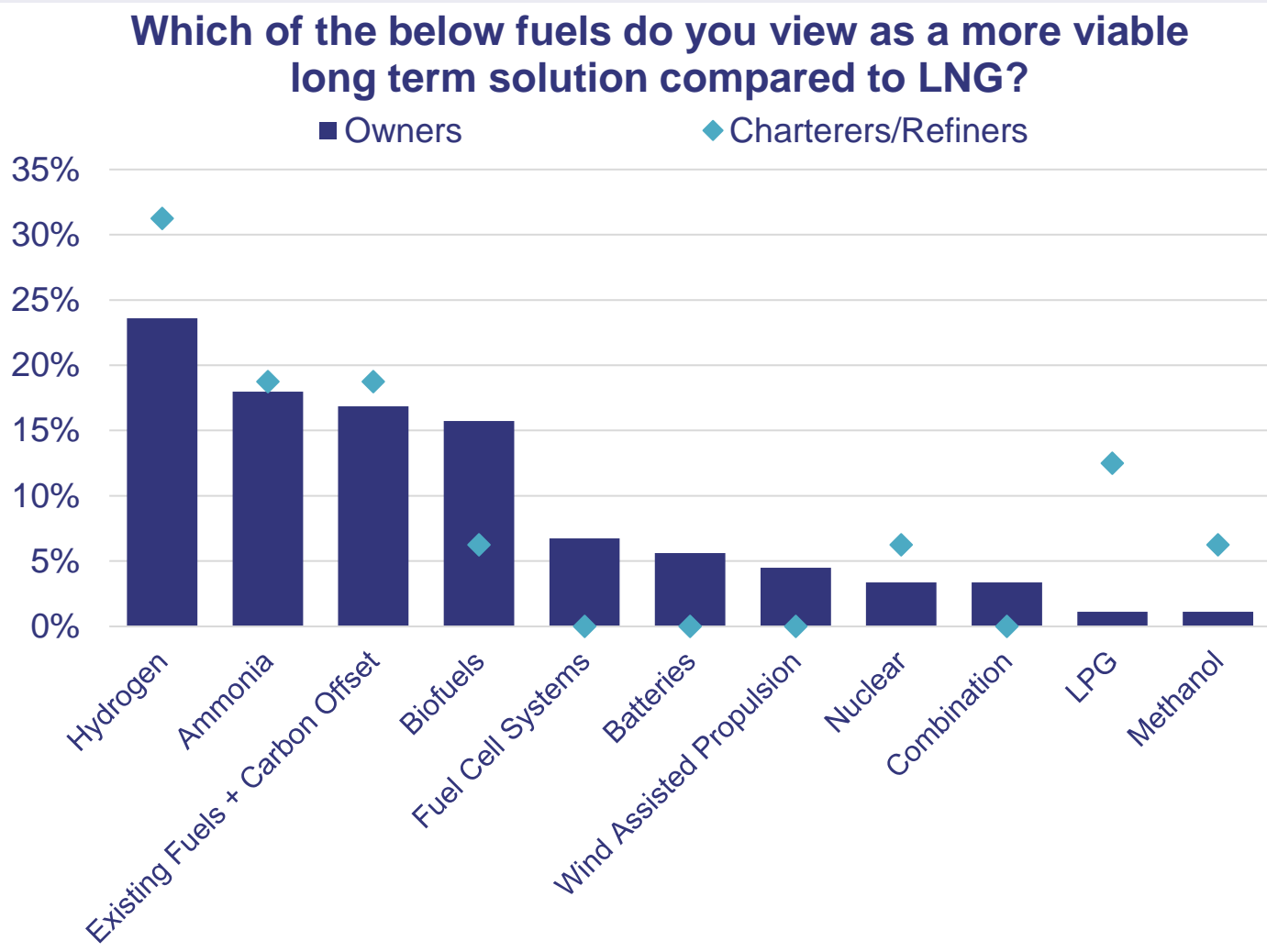
In keeping with the responses to the previous questions, a majority of charterers/refiners do not currently see a clear feasible solution in order for owners to meet the future GHG targets, with fewer than a third of respondents (31%) currently seeing a feasible solution for owners.

The apparent lack of a feasible solution for many charterers/refiners may help explain why a significant number of respondents expect there to be difficulties in achieving both the 2030, and to a lesser extent the 2050 targets.

LNG & Viable Alternative Fuels

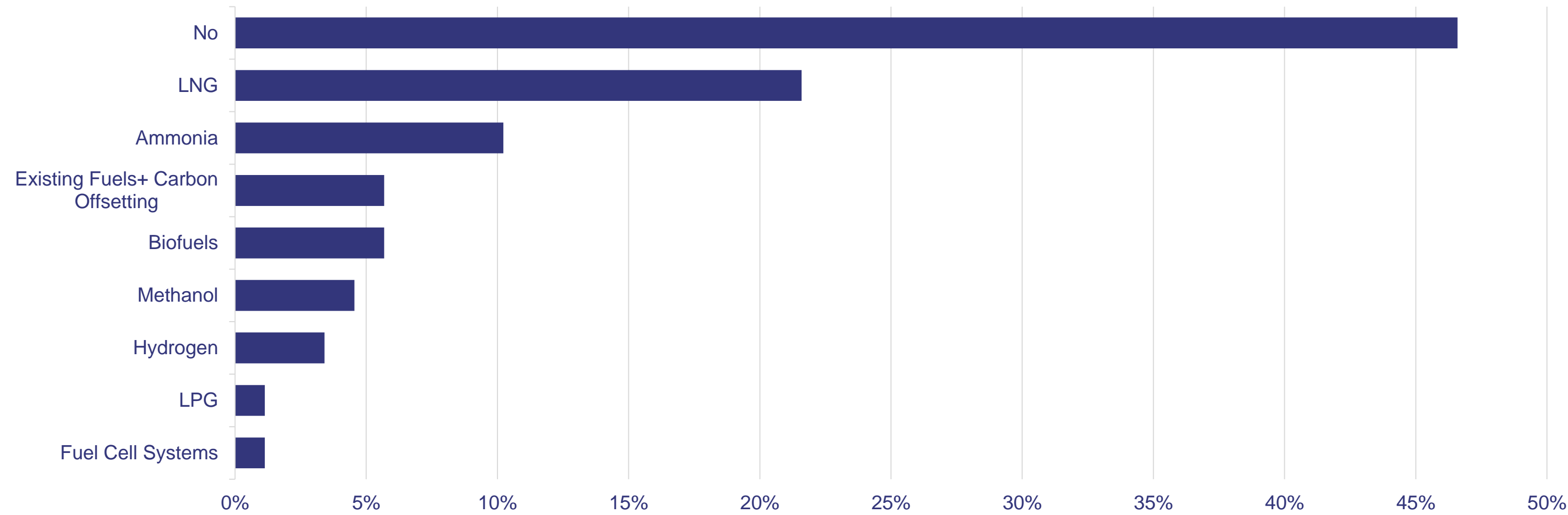


LNG is seen, by both groups, as more of a short term solution to meeting GHG targets, with around 59% of charterers/refiners and 45% of owners seeing it as such. There is a significant drop in respondents expecting LNG to be viable beyond the 20 year mark, suggesting increasing focus to be on other alternative fuels in the longer term timeframes.



Hydrogen is the favoured longer term solution for both owners and charterers/refiners, with 24% and 31% respectively. Among both sets of respondents, Ammonia and Existing Fuels + Carbon Offsetting were the 2nd and 3rd most selected options. There were notable differences, with charterers/refiners favouring LPG and Methanol compared to owners, with the reverse holding for Fuel Cells, Batteries and Wind. The varied answers reflect the likelihood that one size will not fit all for alternative fuels.

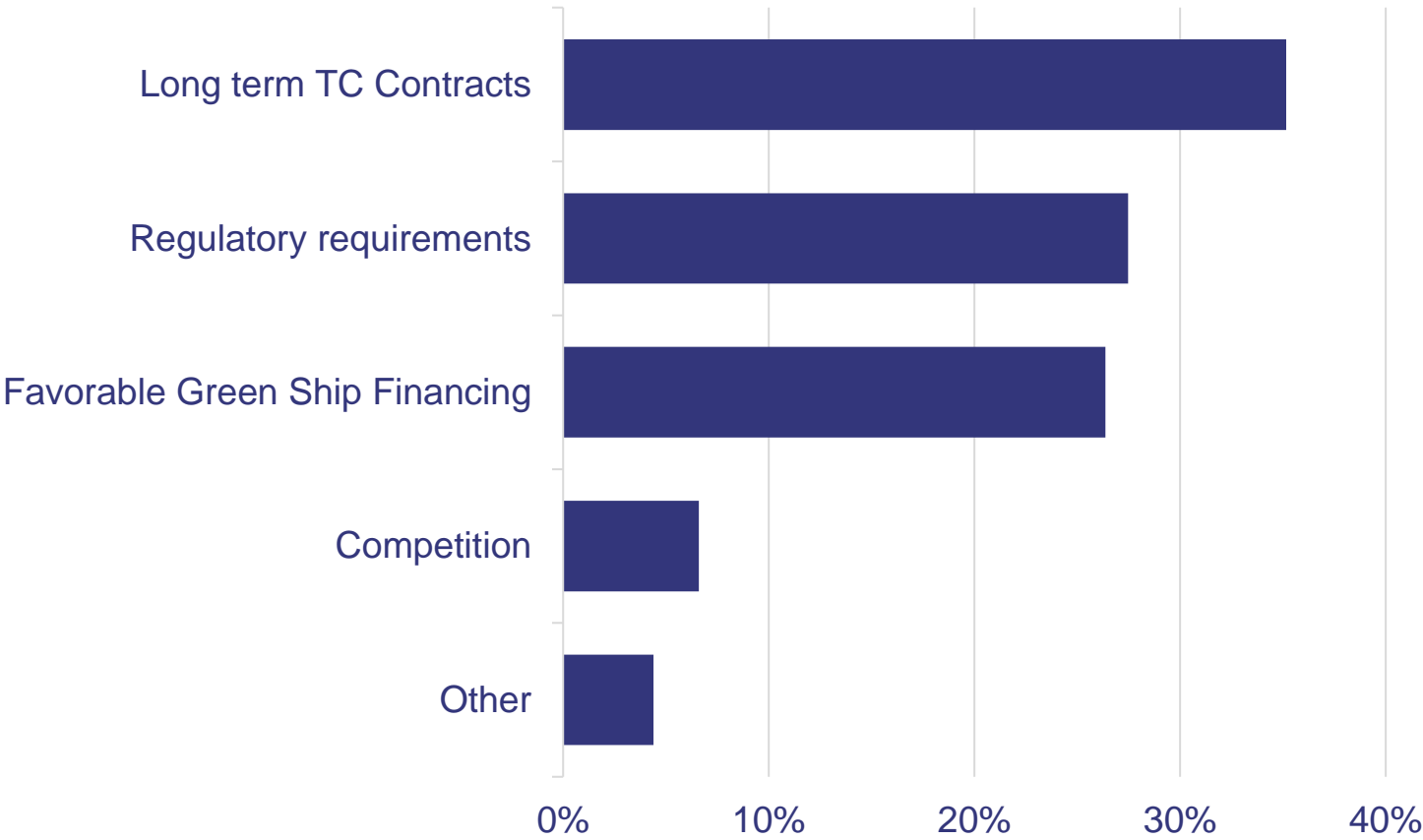
Owners: Are you actively exploring projects involving any of the following alternative fuels?



Almost half of owners (46%) reported as not currently exploring alternative fuel projects, a fact that perhaps help underline why only a minority of respondents to the initial question of whether the IMO 2030 targets would be met answered in the affirmative. Just under 22% of respondents were actively exploring LNG fuelled vessels. This then leaves just under a third of respondents (32%) that were actively exploring other alternative fuels, of which Ammonia fuelled vessels were the clear leader, with just over 10% of owners looking at this as an option. In a previous question Hydrogen was identified as the most viable long term solution, however it is a reflection of the technologies immaturity that this is not yet something being actively explored by the vast majority of owners.

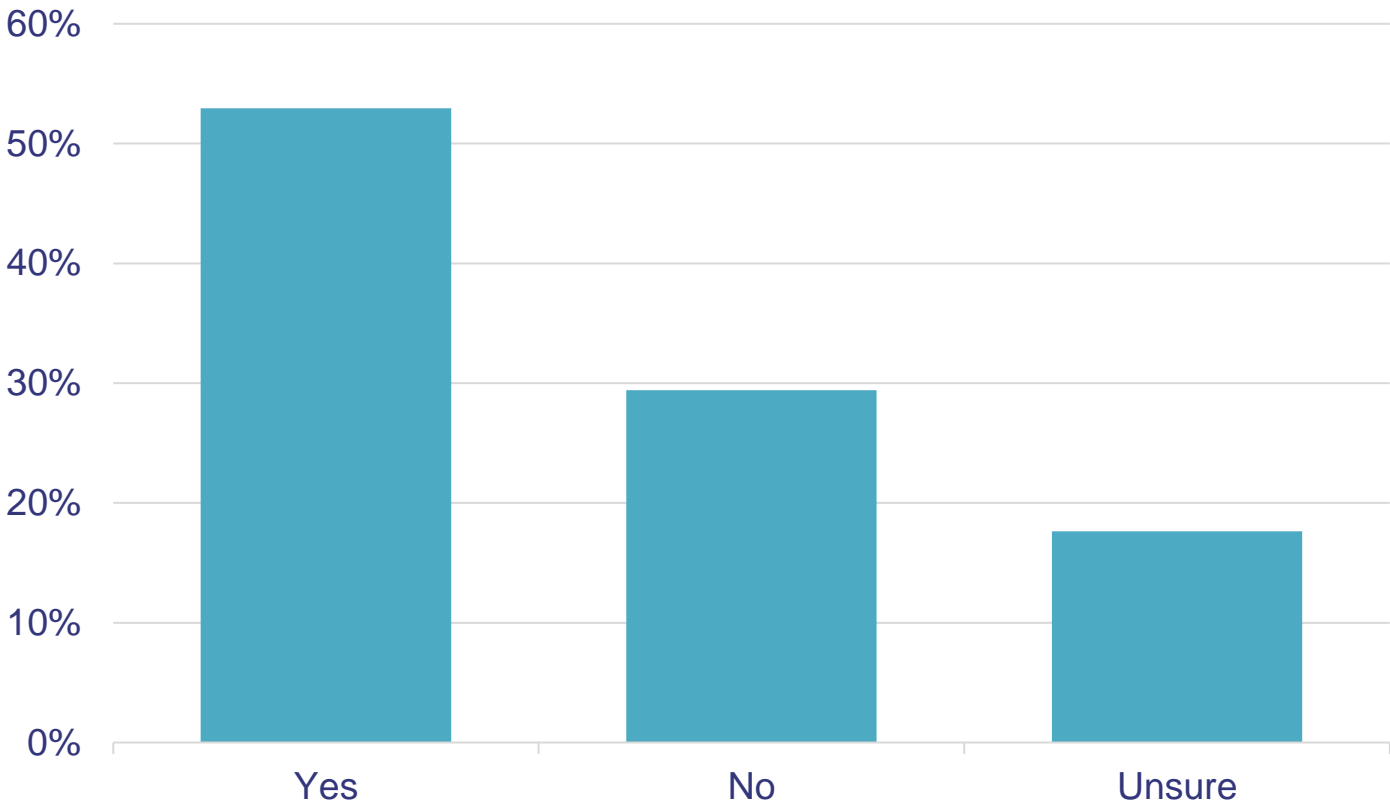
Investment in Alternative Fuels

Owners: What would incentivise you the most in investing in alternative propulsion systems/fuels?



In the owning community it is clear that whilst regulatory changes are important, it is the incentive of long term chartering activity that will be key in making investment decisions in alternative fuel vessels. Almost as important as regulation to the respondents is the availability of Favourable Green Ship Financing.

Charterers/Refiners: Do you view a long term TC on an alternative fuelled vessel as a viable commercial opportunity, given that many owners will require this security in order to invest?



With so many owners responding that Long Term TC Contracts are key, it will be welcome for them to see that our charterers/refiners responded with the majority (53%) viewing long term TC's on alternative fuelled vessels as viable. It will be interesting to see if such percentages change over time, as alternative fuels become more mature and more widespread in the market.

Future Fuels Survey – Full List of Questions

Owners' Survey

1. What kind of vessels do you own / manage?
2. Does your fleet have scrubbers installed on trading or on order vessels?
3. Is your company investigating the installation of scrubbers going forward?
4. Do you feel that scrubbers are still a viable investment, bearing in mind the availability of sufficient compliant fuel?
5. What do you feel are the biggest challenges in meeting future IMO GHG targets?
6. Do you view LNG as a fuel as a viable solution to meeting IMO GHG emissions targets?
7. Which of the below fuels do you view as a more viable long-term solution compared to LNG?
8. Are you actively exploring projects involving any of the following alternative fuels?
9. Do you think the IMO's goal of 40% CO2 Intensity Reduction by 2030 can be achieved?
10. Do you think the IMO's goal of 50% GHG Reduction by 2050 can be achieved?
11. Which of the below would incentivise you the most in investing in alternative propulsion systems/fuels?

Charterers' Survey

1. Which of the following best describes your business?
2. Has your company fixed vessels on timecharter with scrubbers installed?
3. Do you feel that scrubbers are still a viable investment for owners, bearing in mind the availability of sufficient compliant fuel?
4. What do you feel are the biggest challenges in meeting future IMO GHG targets?
5. Do you feel there is currently a feasible solution for owners in order to meet the future GHG targets?
6. Do you view LNG as a fuel as a viable solution to meeting IMO GHG emissions targets?
7. Which of the below fuels do you view as a more viable long-term solution compared to LNG?
8. Do you think the IMO's goal of 40% CO2 Intensity Reduction by 2030 can be achieved?
9. Do you think the IMO's goal of 50% GHG Reduction by 2050 can be achieved?
10. Do you view a long-term TC on an alternative fuelled vessel as a viable commercial opportunity, given that many owners will require this security in order to invest?

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