**Dear Sir/Madam,**

**This is a survey related to the use of green energy in the maritime industry, LNG, for the maritime industry. It consists of two parts. The first part focuses on the decision making related to LNG phasing in related considerations while the second part focuses on the LNG bunker related considerations. Your important input is vital for us to form a full picture of current LNG related issues in Hong Kong. The result will be collected by email within 2 weeks, followed by 1-2 clarification phone call(s) or meeting(s) whenever appropriate. All the information collected shall be kept confidentially for study purpose only. A final report shall be prepared and presented for the Hong Kong Government in response to the recent issued Action Plan on Maritime and Port Development Strategy, focusing on the concept and development of ESG and Green Bunkering Port in the future. Should you have any question about this survey, we would be willing to response to you timely. Thank you very much!**

**Your sincerely,**

**Dr. Judy Tong**

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**Deputy Director, CY Tung International Centre of Maritime Studies**

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**Company & Respondent Basic Information**

|  |  |
| --- | --- |
| Company Name: |  |
| Company Nature: | Ship owner / Ship Management / Ship Operator / Ship agency / LNG supplier / Terminal Operator / Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Company Address: |  |
| Name of Respondent: |  |
| Job Title: |  |
| Current & Previous Department: |  |
| Major Accountabilities: |  |
| Date of joining: |  |
| Telephone (optional): |  |
| Email: |  |

**Part 1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Concept and Preferences (please input ” Y” to show your choice in the box for each question):** | **Strongly Disagree** |  **Disagree** | **Neutral** | **Agree** | **Strongly Agree** |
| **Sample: This is a survey is easy for us to fill in and return.** |  |  |  | Y |  |
| 1.       LNG is a new topic for our company. |   |   |   |   |   |
| 2.       LNG is a key consideration for our current business. |   |   |   |   |   |
| 3.       LNG and its related considerations are on our business plan this year. |   |   |   |   |   |
| 4.       We plan to phase in LNG in this year for our ocean-going vessel(s) in this year. |   |   |   |   |   |
| 5.       We plan to phase in LNG in this year for our river- or coastal-going vessel(s) in this year. |   |   |   |   |   |
| 6.       We plan to phase out the use of traditional bunker, Heavy Fuel Oil (HFO) in this year. |   |   |   |   |   |
| 7.       LNG is an important topic for our company. |   |   |   |   |   |
| 8.       We want to have more knowledge about LNG. |   |   |   |   |   |
| 9.       We want to invest and make LNG related business decision(s) due to lower operating cost. |   |   |   |   |   |
| 10.   We want to invest and make LNG related business decision(s) due to higher operation efficiency. |   |   |   |   |   |
| 11.   We want to invest and make LNG related business decision(s) due to rules and regulations. |   |   |   |   |   |
| 12.   We want to invest and make LNG related business decision(s) due to environmental concern. |   |   |   |   |   |
| 13.   We want to invest and make LNG related business decision(s) due to customer requirement. |   |   |   |   |   |
| 14.   We want to invest and make LNG related business decision(s) for sustainable development of our company. |   |   |   |   |   |
| 15.  If we could choose to use current form of energy, we will keep it without new investment. |   |   |   |   |   |
| 16.  If the new building cost is similar, we will consider the sole LNG-fuel vessel. |   |   |   |   |   |
| 17.  If the new building cost is similar, we will consider the duel-fuel vessel include LNG as one of the fuel type. |   |   |   |   |   |
| 18.  LNG is an important type of energy source for the service industry. |   |   |   |   |   |
| 19.   LNG is an important type of energy source for the manufacturing industry. |   |   |   |   |   |
| 20.   LNG is an important type of cargo for the maritime industry. |   |   |   |   |   |
| 21.   LNG is a potential type of cargo for my company to transport. |   |   |   |   |   |
| 22.   LNG is a potential type of energy form for our company to use for our ship as sole fuel. |   |   |   |   |   |
| 23.   LNG is a potential type of energy form for our company to use for our ship as duel fuel. |   |   |   |   |   |
| 24.   To use as sole fuel, LNG is preferred instead of the traditional bunker due to lower operating costs. |   |   |   |   |   |
| 25.   To use as sole fuel, LNG is preferred instead of the traditional bunker due to the simpler bunkering process. |   |   |   |   |   |
| 26.   To use as sole fuel, LNG is preferred instead of the traditional bunker due to more bunkering stations available worldwide. |   |   |   |   |   |
| 27.   To use as sole fuel, LNG is preferred instead of the traditional bunker due to lower impact the environment. |   |   |   |   |   |
| 28.   To use as sole fuel, LNG is preferred instead of the traditional bunker due to allowance from the government is attractive. |   |   |   |   |   |
| 29.   To use as sole fuel, LNG is preferred instead of the traditional bunker due to a cheaper ship building cost. |   |   |   |   |   |
| 30.   To use as dual fuel, LNG is preferred as ship conversion cost could be covered by subsequent cost-saving.  |   |   |   |   |   |
| 31.   To use as duel-fuel, LNG is preferred instead of the traditional bunker due to lower operating costs. |   |   |   |   |   |
| 32.   To use as duel-fuel, LNG is preferred instead of the traditional bunker due to the simpler bunkering process. |   |   |   |   |   |
| 33.   To use as duel-fuel, LNG is preferred instead of the traditional bunker due to more bunkering stations available worldwide. |   |   |   |   |   |
| 34.   To use as duel-fuel, LNG is preferred instead of the traditional bunker due to lower impact the environment. |   |   |   |   |   |
| 35.   To use as duel-fuel, LNG is preferred instead of the traditional bunker due to allowance from the government is attractive. |   |   |   |   |   |
| 36.   To use as duel-fuel, LNG is preferred instead of the traditional bunker due to a cheaper ship building cost. |   |   |   |   |   |
| 37.   To use as duel-fuel, LNG is preferred as ship conversion cost could be covered by subsequent cost-saving.  |   |   |   |   |   |
| 38.   If our company could be supported by the government to convert old vessel into new one, LNG-fuel, we will be more willing to explore the option. |   |   |   |   |   |
| 39.   If our company’s ship(s) could be converted from the traditional fuel to LNG-fuel (sole or dual-fuel) with allowance supported by the government, we will start to place an order to buy new vessel. |   |   |   |   |   |
| 40.   If our company’s ship(s) could be converted from the traditional fuel to LNG-fuel (sole or dual-fuel) with allowance supported by the government, we will start to place an order to convert one or some of our vessel(s).  |   |   |   |   |   |
| 41.   LNG is still not mature in many ports, including the port of Hong Kong. |   |   |   |   |   |
| 42.   LNG bunker could be a new business for our company to consider starting in Hong Kong. |   |   |   |   |   |
| 43.   LNG bunkers are not common in many key ports in the world. |   |   |   |   |   |
| 44.   Hong Kong could be a green bunker port in the long run. |   |   |   |   |   |
| 45.   Hong Kong has provided enough maritime information for my company to benchmark for excellence. |   |   |   |   |   |
| 46.   Hong Kong is still our company’s key operating location. |   |   |   |   |   |
| 47.   Hong Kong is not as important as we think in the past. |   |   |   |   |   |
| 48.   Our company has increased our company size in terms of no. of ship tonnage or TEU in the past year. |   |   |   |   |   |
| 49.   Our company has increased our company in terms of office staff and/or no. of office worldwide in the past year. |   |   |   |   |   |
| 50.   Our company could make good business decisions related to LNG including new business related to the Floating Storage and Regasification Unit (FSRU). |   |   |   |   |   |
| 51.   Our company knows about the FSRU and its ability to replace on-shore LNG bunker facility for our own vessel(s). |   |   |   |   |   |
| 52.   Our company knows about the FSRU and its ability to replace on-shore LNG bunker facility for our own and other vessel(s) too. |   |   |   |   |   |
| 53.   FSRU business is new to us and we will not consider it due to large investment.  |   |   |   |   |   |
| 54.   FSRU business is new to us and we will not consider due to lack of business knowledge. |   |   |   |   |   |
| 55.   FSRU business is new to us and we will not consider due to lack of successful example. |   |   |   |   |   |
| 56.   We do not see the need to have an FSRU in Hong Kong for LNG bunker. |   |   |   |   |   |
| 57.   We understand LNG bunker process is different from the traditional one. |   |   |   |   |   |
| 58.   We understand LNG bunker but we will not touch upon this business for its high business risk. |   |   |   |   |   |
| 59.   We believe our government should offer more support to ensure LNG supply is available in Hong Kong. |   |   |   |   |   |
| 60.   We know it is a time of change but we do not want to change our ship unless our customer required.  |   |   |   |   |   |

**Part 1**

1. **Questions about FSRU related concept and feedback:**
2. **Sample question. What is the key driving force of Green Bunkering Project in your company? (You may want to “underline” or “circle” your answer. You may choose more than one answer. Underline may be easier. Thank you!)**
	1. **Cost-saving**
	2. **Waste reduction**
	3. **Staff awareness**
	4. **Company direction**
	5. **Support from the Government**
	6. **Not applicable, reason(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

### 1. Which stage of your company operates any projects related to FSRU vessels/has your company manufactured FSRU vessels? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Stage 1 (Plan to operate)

b. Stage 2(May operate)

c. Stage 3 (Shall operate)

d. Stage 4 (Operating with some projects related to FSRU)

e. Not applicable as FSRU has not been considered so far.

### 2. What is your current role/position at your company? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Shipowner

 b. Operator

c. Investor

### 4. Will your company plan to develop new business within 5 years? (Please “underline” or “circle” your answer. You choose one answer only.)

a. Yes

b. No

c. Maybe

### 5. Does your company have dock facilities or FSRU facilities? (Please “underline” or “circle” your answer. You choose one answer only.)

a. Yes b. No

### 6. What is/are the number of meetings carried out for the FSRU project frequency? (Please “underline” or “circle” your answer. You choose one answer only.)

a. None

b. Weekly

c. Monthly

d. Quarterly

e. Yearly

### 7. How does your company assess the technical and operational risks of LNG-fuel vessels? (Please “underline” or “circle” your answer. You choose one answer only.)

a. Much higher

b. Somewhat higher

c. About the same

d. Somewhat lower

e. Much lower

f. Others: [Please specify]: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

###

### 8. How does your company evaluate the competitiveness of LNG-fuel vessels in terms of total cost? (Please “underline” or “circle” your answer. You choose one answer only.)

a. Much more competitive

b. Somewhat more competitive

c. About the same

d. Somewhat less competitive

e. Much less competitive

### 9. How does your company measure the environmental benefits of LNG-fuel vessels in terms of greenhouse gas emissions and air quality? (Please “underline” or “circle” your answer. You choose one answer only.)

a. Very significant

b. Significant

c. Moderate

d. Minor

e. Negligible

### 10. How important is the vessel classification in your decision-making process? (Please “underline” or “circle” your answer. You choose one answer only.)

a. Very important - It is a key factor in vessel selection

b. Somewhat important - It is considered, but not the sole determining factor

c. Not important - Vessel classification does not significantly impact the decision

d. Not sure

### 11. When selecting LNG-type of vessels for new business, the challenges or obstacles that you may face include: (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Limited availability of suitable LNG vessels in the market

b. High initial costs and investment required

c. Uncertainty regarding future regulations and emission standards

d. Lack of accurate and reliable data on vessel performance

e. Others: [Please specify]

### 12. Are there any specific financial or economic considerations that influence your decision-making process for selecting LNG-type (not LNG-fuel) ships? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Return on investment (ROI)

b. Financing options and terms

c. Fuel price projections

d. Potential revenue streams

e. Others: [Please specify]

### 13. How important is the safety record when selecting LNG-type vessels? (Please “underline” or “circle” your answer. You choose one answer only.)

a. Very important, it is one of the key factors for vessel selection

b. Relatively important, but not the sole determining factor

c. Not very important, will not significantly impact the decision

d. Uncertain

### 14. For the next 10 years, which areas of LNG-type vessel technology do you have the highest expectations for? (Please “underline” or “circle” your answer. You choose one answer only.)

a. More efficient propulsion systems

b. More cost-effective fuel cell technology

c. Intelligent vessels and automated operations

d. Superior power and support services

e. Others: [Please specify]

###

### 15. What is the maximum investment to such a project in the first year? (Please “underline” or “circle” your answer. You choose one answer only.)

Answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### 16. In your opinion, what role can classification societies like the American Bureau of Shipping play in promoting green shipping development? (Please “underline” or “circle” your answer. You choose more than one answer.)

a. Formulate stricter environmental standards

b. Provide more technical support and pilot projects

c. Promote industry self-regulation and compliance

d. All of the above

### 17. Are you willing to share your current LNG vessel fleet operation data with third parties like classification societies to support industry research and development? (Please “underline” or “circle” your answer. You choose one answer only.)

a. Willing

b. Currently not willing but may consider the future

c. Unwilling

d. We do not have a fleet

### 18. For the next 10 years, which areas of LNG-type vessel technology do you have the highest expectations for? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. More efficient propulsion systems

b. More cost-effective fuel cell technology

c. Intelligent vessels and automated operations

d. Superior power and support services

e. Other:

### 19. Which factors would be considered when choosing the LNG-type ship to be your core business? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Freight capacity requirements

b. Shipyard gap for date

c. Ship performance

d. Security features and compliance

e. Infrastructure (FSRU & Oil pipeline)

f. Maturity of technology

g. Demand of maintenance and reliability

h. Energy density

i. Other:

### 20. What factors would you consider when choosing FSRU for refuelling your owned ship? ? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. FSRU price

b. Stable supply

c. Subsequent maintenance costs

d. Initial investment cost

e. Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### 21. How do you evaluate the comparability of different propulsion systems (such as gas turbine, steam turbine, etc.) for LNG vessels? ? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Power and efficiency tests

b. Operational cost analysis

c. Reliability record evaluation

d. Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### 22. Will you refer to the international business capabilities of shipowners, such as the global fleet scale, operational efficiency, etc.? If yes, what influence will it have on the selection decision?

### (Please “underline” or “circle” your answer. You choose one answer only.)

a. Yes, it will have a significant influence on the selection decision.

b. Yes, but it will have a moderate influence on the selection decision.

c. No, it will not have much influence on the selection decision.

### 23. When evaluating quotations from different ship owners, will you consider the lifecycle cost, including vessel maintenance costs? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Yes, the full lifecycle cost is important for us.

b. Will consider, but not decisive.

c. Will not refer much.

d. Will not refer.

### 24. What are the key criteria to determine the budget for "renting" an FSRU or its service? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Competitor quotes

b. FSRU age and performance

c. Local market conditions

d. Shipowner costs

e. Cargo throughput

### 25. Which of the following factors do you think are important considerations in the pricing strategy for the LNG supply contract of the FSRU project (Rent whole FSRU ship or FSRU services)? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Cost structure and long-term operating expenses

b. Geographic location and transportation distance

c. Long-term LNG price trends

d. Demand and supply balance

e. Market competition

f. Government policies and regulations

g. Other:

### 26. Which of the following factors do you think are important considerations in the pricing strategy for the regasification service contract of the FSRU project? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Regasification capacity and efficiency

b. Scope and flexibility of services provided

c. Demand and supply

d. Long-term LNG price trends

e. Market competition

f. Government policies and regulations

g. Other:

### 27. How does your company ensure compliance with regulatory requirements related to LNG vessels? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. Regular audits and inspections

b. Collaboration with classification societies

c. Monitoring industry guidelines and updates

### 28. Which industry guidelines and updated compliance are you regulated by? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. International Maritime Organization (IMO) regulations

b. Classification society rules

c. Gas Carrier Code

d. Port authority regulations

e. Environmental Protection Agency (EPA) regulations

f. Industry best practices and recommendations

g. Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### 29. How does your company cope with the regulatory and compliance challenges related to LNG vessels and their classification in different regions and jurisdictions? (Please “underline” or “circle” your answer. You may choose more than one answer.)

a. We follow the international standards and best practices.

b. We adapt to the local requirements and regulations.

c. We seek guidance and support from the classification society or other experts.

d. We lobby for more harmonized and consistent rules and policies.

e. Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### 30. Do you think using big data analysis of vessel performance data can improve the accuracy and efficiency of selection decisions? (Please “underline” or “circle” your answer. You choose one answer only.)

a. Can greatly improve

b. Can slightly improve

c. No significant help

d. Unfamiliar with such technology

**Part 2 About LNG-bunkering in some Asia Ports**

1. **About your operating ship(s): (Please fill in the information as indicated in each column)**

**Containerships (if applicable):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LOA | Total number of vessels | No. of vessel which is/are Dual fuel (LNG and traditional fuel) | Consider choosing LNG ship (Yes/No) | Bunkering in Asia (Yes/No) |
| <200m |  |  |  |  |
| Between 200m and 300m |  |  |  |  |
| >300m |  |  |  |  |

**Dry bulk carriers**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LOA | Total number of vessels | No. of vessel which is/are Dual fuel (LNG and traditional fuel) | Consider choosing LNG ship (Yes/No) | Bunkering in Asia (Yes/No) |
| <200m |  |  |  |  |
| Between 200m and 300m |  |  |  |  |
| >300m |  |  |  |  |

**Oil Tanker:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LOA | Total number of vessels | No. of vessel which is/are Dual fuel (LNG and traditional fuel) | Consider choosing LNG ship (Yes/No) | Bunkering in Asia (Yes/No) |
| <200m |  |  |  |  |
| Between 200m and 300m |  |  |  |  |
| >300m |  |  |  |  |

**LPG Tanker:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LOA | Total number of vessels | No. of vessel which is/are Dual fuel (LNG and traditional fuel) | Consider choosing LNG ship (Yes/No) | Bunkering in Asia (Yes/No) |
| <200m |  |  |  |  |
| Between 200m and 300m |  |  |  |  |
| >300m |  |  |  |  |

**General cargoes ship:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LOA | Total number of vessels | No. of vessel which is/are Dual fuel (LNG and traditional fuel) | Consider choosing LNG ship (Yes/No) | Bunkering in Asia (Yes/No) |
| <200m |  |  |  |  |
| Between 200m and 300m |  |  |  |  |
| >300m |  |  |  |  |

**Special purpose ship(s), please specific: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LOA | Total number of vessels | No. of vessel which is/are Dual fuel (LNG and traditional fuel) | Consider choosing LNG ship (Yes/No) | Bunkering in Asia (Yes/No) |
| <200m |  |  |  |  |
| Between 200m and 300m |  |  |  |  |
| >300m |  |  |  |  |

Please provide the reason(s) of NOT bunkering in Asia (in point form):

|  |
| --- |
|  |

1. **More about LNG bunkering in Asia:**

### Which factors would be considered when using LNG fuel? (Please “underline” or “circle” your answer. You may choose more than one answer.)

o Efficiency and performance

o Flexibility and accessibility

o Energy availability

o Time-efficiency

o Cost-effectiveness

o Social responsibility (environmentally friendly)

o Sustainable development

o Regulation from IMO

Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Please provide some information about vessels that have LNG bunkering in the Asian port and state the reason for both bunkering and not to bunkering in each port (in point form):

|  |  |  |  |
| --- | --- | --- | --- |
| LNG bunkering port in Asia | No. of vessel bunkered | Bunkered Volume in 2023 (tons) | Predicts of future bunking volume in 2033 (increase/decrease by %) |
| Shanghai Port |  |  |  |
| Reason(s): |
| Singapore Port |  |  |  |
| Reason(s): |
| Tianjin Port |  |  |  |
| Reason(s): |
| Guangzhou Port |  |  |  |
| Reason(s): |
| Port of Yokohama |  |  |  |
| Reason(s): |
| Gwanyang Port |  |  |  |
| Reason(s): |
| Yantian Port |  |  |  |
| Reason(s): |
| Ningbo Port |  |  |  |
| Reason(s): |
| Shekou Port |  |  |  |
| Reason(s): |
| Others: |  |  |  |
| Reason(s): |

1. What is the average annual LNG fuel usage of your company in Asia for each type of ship, if applicable?
	1. Containership: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Bulk carries: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Oil tanker: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. LPG tanker: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	5. Special purpose ship, if any: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### What is/are your company’s key criteria for choosing a port for LNG bunkering ports? (Please “underline” or “circle” your answer. You may choose more than one answer.)

o Brand name

o Bulk discount rate

o Product Quality

o Service quality

o Servicing Location

o Safety standard

o Average waiting time

o Flexibility in operations

o Service agreement with or without minimum penalty cost

o Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Why does your company NOT choose to bunker in LNG ports in Asia? (Choose one or more than one by underlying the answer(s), please.) (Please “underline” or “circle” your answer. You may choose more than one answer.)

o Location is too rigid with no or low flexible

o Distance between the station or serving point and the vessel is too far away

o Bunker in other areas is more attractive

o Bunkering price is relatively expensive

o Waiting time of the port is too long

o Bunkering facility is not safe or convenient

o No or low incentive including bulk discount

o Signed agreement with some other service providers in other territories out of Asia

o Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Do you agree with the statement that “Some key Asian ports shall become main bunkering stations, other than some key ports in the other territories”? (Please “underline” or “circle” your answer. You choose one answer only.)

o Yes

o No, why: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Do you agree that “There is such need of Asia Ports could increase number of available stations for LNG bunkering?” (Please “underline” or “circle” your answer. You choose one answer only.)

o Yes,

which port(s) do you think is needed?

|  |
| --- |
|  |

o No

1. Which type of vessels does your company mainly operate? (Please “underline” or circle” your answer. You choose one answer only.)

o Vessels with traditional fuel (**please skip Q14 to Q16**)

o Vessels with LNG fuel (**please skip Q11 and Q13**)

o Vessels with dual fuel

**Vessels with traditional fuel**

1. Which of the following factor(s) will be considered for vessels remaining operation with traditional fuel? (Please “underline” or circle” your answer. You choose one answer only.)

o Cost

o Facility of bunkering port

o Location of bunkering port

o Resources of traditional fuel

o Technology challenges

o Existing fleet compatibility

o Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Would you consider choosing to operate an LNG fuel ship in the future? (Please “underline” or circle” your answer. You choose one answer only.)

o Yes

o No

1. Do you have plans to transition all/some of the traditional vessels to LNG-powered vessels in the future? (Choose “Yes” or “No” by underlying the answer, please.)

o Yes,

what is/are the main motivation(s)? (choose one or more than one by underling the answer(s), please.)

|  |
| --- |
| o Environmental regulationso Cost savingso Operational efficiencyo Sustainable developmento Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

o No

o Not yet decided.

**Vessels with LNG fuel**

1. What challenges do you face in identifying suitable LNG bunkering ports? (Please “underline” or circle” your answer. You choose one answer only.)

o Limited availability of LNG bunkering facilities

o Vessel Compatibility

o Regulatory Variations

o Lack of Standardization

1. To what extent are the usage differences between LNG and traditional fuel? (Please type one “Y” in the box of your choices for each row in below table.)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Lower | Similar | Higher |
| Operating Costs |  |  |  |
| Environmental Pollution |  |  |  |
| Infrastructure Requirement |  |  |  |
| Energy Policy |  |  |  |
| Market Flexibility |  |  |  |

1. Does the anchorage waiting time affect the productivity of LNG-powered vessels? (Please “underline” or circle” your answer. You choose one answer only.)

o Significant productivity drops

o Moderate productivity drops

o Negligible productivity drops

o Not applicable

1. How do you perceive the scalability of LNG fuel infrastructure for ships to meet the growing demand for LNG-powered ships? (Please “underline” or circle” your answer. You choose one answer only.)

o Highly scalable

o Moderately scalable

o Limited scalability

o Not sure

1. What are the potential barriers to the widespread adoption of LNG fuel in the shipping industry? (Please “underline” or circle” your answer. You choose one answer only.)

o Lack of industry standards and regulations

o Limited availability of LNG bunkering infrastructure

o Higher initial investment costs

o Uncertain or volatile LNG fuel prices

o Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Bunkering with FSRU consideration**

1. Do you have any FSRUs? (Please “underline” or circle” your answer. You choose one answer only.)

o Yes

o No

1. If yes, what is the purpose? (Please “underline” or circle” your answer. You choose one answer only.)

o Self-use

o LNG-station

1. Would you consider adopting FSRU technology in future energy supply? (Please “underline” or circle” your answer. You choose one answer only.)

o Yes

o No

o Not yet decided

1. What are the key advantages of using FSRUs compared to onshore LNG terminals? (Please “underline” or circle” your answer. You choose one answer only.)

o Flexibility in location

o Faster deployment

o Lower infrastructure costs

o Easier access to offshore LNG sources

o Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What are the key challenges or limitations of using FSRUs? (Please “underline” or circle” your answer. You choose one answer only.)

o Limited storage capacity

o Weather-dependent operations

o Higher operating costs compared to onshore terminals

o Technological complexity

o Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. How do you see the future growth potential of FSRUs in the energy industry? (Please “underline” or circle” your answer. You choose one answer only.)

o High growth potential

o Moderate growth potential

o Limited growth potential

o Not sure

1. What do you think of the reliability and availability of LNG supply for your vessels in Asia? (Please “underline” or circle” your answer. You may choose more than one answer.)

o Reliable and readily available

o Occasionally constrained

o Unreliable or insufficient

o Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. In your opinion, what is the most suitable application for FSRUs? (Please “underline” or circle” your answer. You may choose more than one answer.)

o Providing energy to remote areas

o Augmenting existing onshore LNG infrastructure

o Meeting seasonal fluctuations in natural gas demand

o Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**About Red Sea Crisis:**

1. Do the shipping routes affect by political issue (Red Sea attacks, Russo-Ukrainian War)? (Please “underline” or circle” your answer. You choose one answer only.)

o Yes

o No

1. Is there any increase in refuelling volume in Asia due to the influence of routes? (Please “underline” or circle” your answer. You choose one answer only.)

o Yes

o No

Thank you for your value time and important responses!

Please send back your responses (saved copy of this WinWord file)

to this email address: judy.fa.tong@polyu.edu.hk

with Email Subject: “LNG Survey Reply 2024”

Thank you very much!! 😊Have a nice day!!