



IAPH

International Association
of Ports and Harbors

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IAPH Audit Tool for LNG Bunker Facility Operators

By IAPH's working group on LNG fuelled vessels

Who's afraid of LNG? - Baku, May 10, 2018
Peter Alkema, Port of Amsterdam

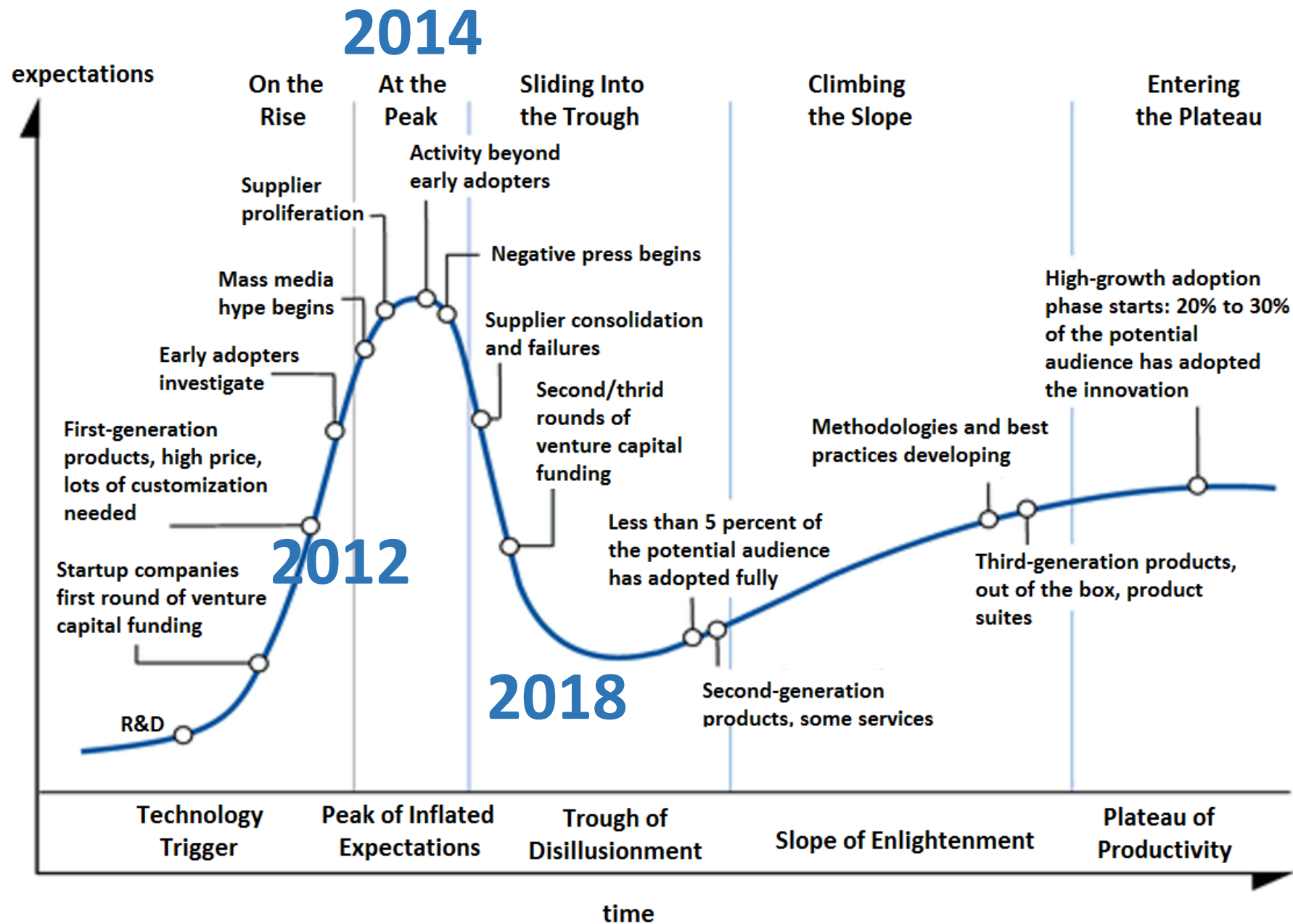
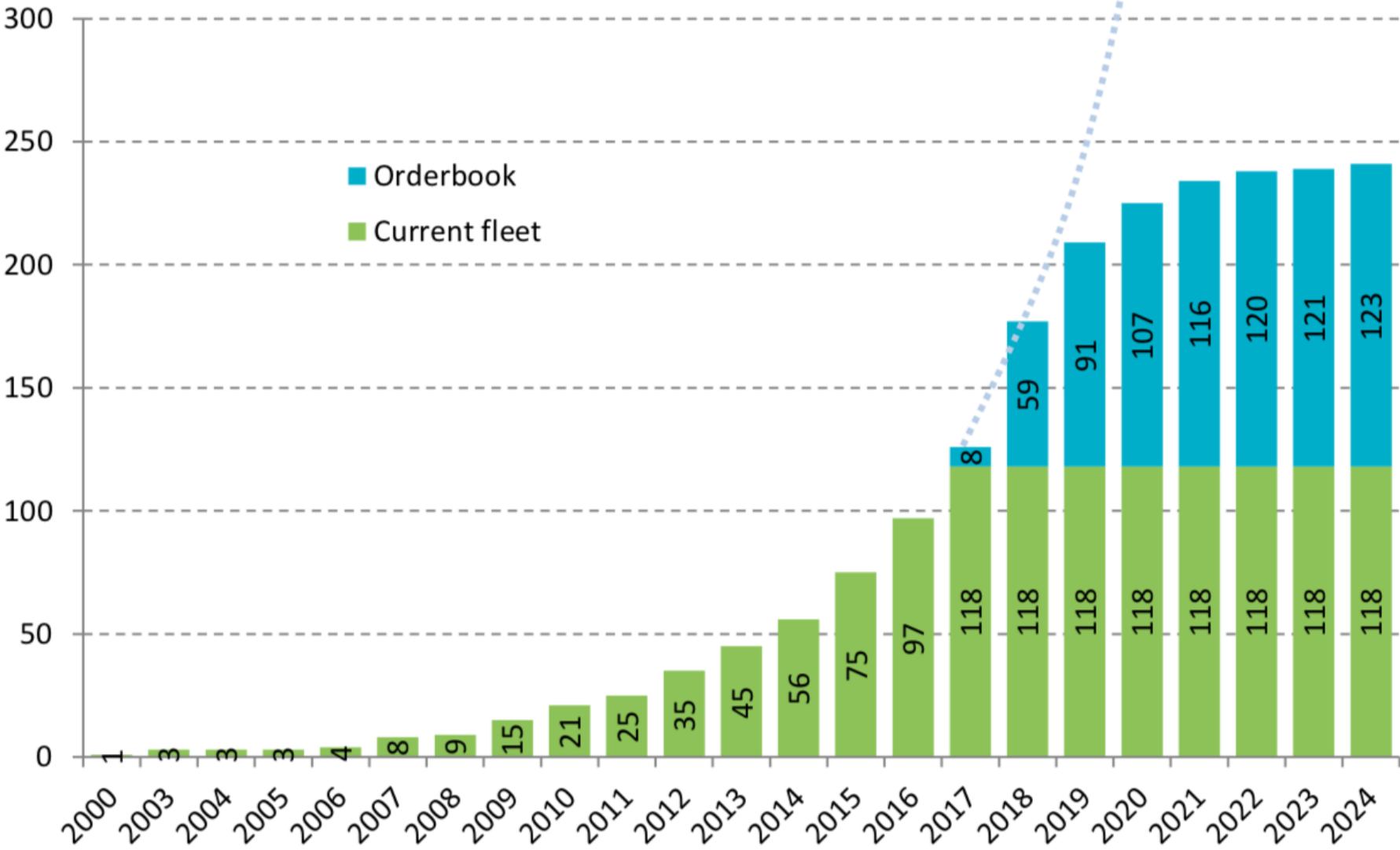


Figure 1. LNG-fuelled fleet and orderbook, cumulated number of ships



Source: Data from DNV GL (2017), on 01.12.2017

DNV's Maritime forecast 2050

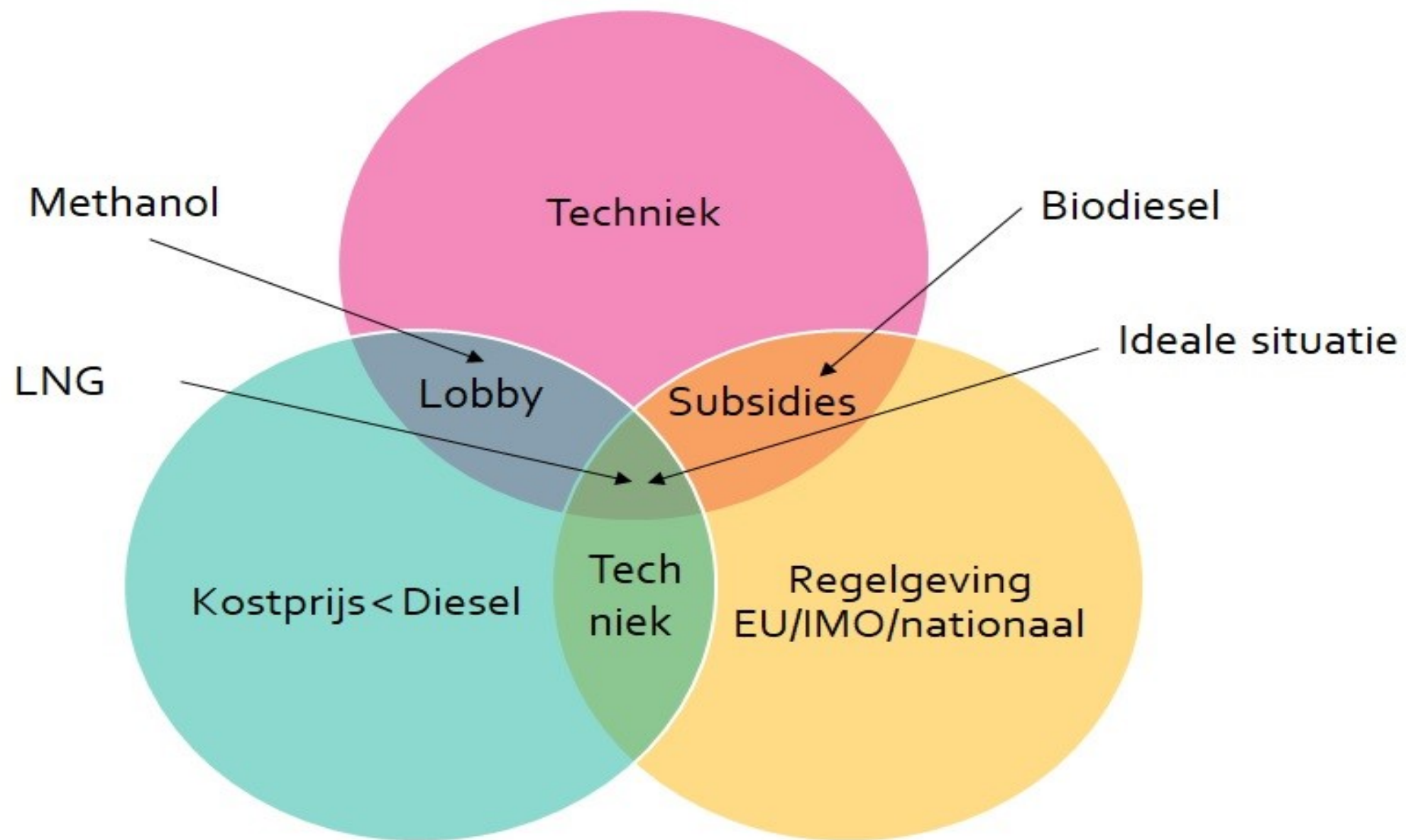
The fuel mix that we see beginning to shift today, will be much more diverse in 2050. Oil will no longer be the overwhelming choice for trading vessels. Natural gas will step up to become the second-most widely used fuel, with a third of the world's fleet, and new low-carbon alternatives will proliferate, supplying nearly a quarter of the fleet. The continuing pressure to reduce emissions to air and the growing drive toward decarbonization, shapes the fleet of 2050 in important ways, particularly in the choice of fuels. Because of the long lifespan of a maritime asset, this means that sooner rather than later, the industry will have to look to creating vessels and a global fleet that are “carbon robust”.

DNV CEO Knut Orbeck-Nilssen

International Transport Forum

The recent order by container line CMA CGM of nine LNG-enabled mega-container ships is likely to be followed by similar orders from other lines. This would increase the prospects for bunkering of LNG-fuelled ships on main East-West trade lanes.

Regulations to reduce SOx and NOx emissions from ships have increased demand for alternative propulsion options, including LNG. In particular, the stricter requirements in Emission Control Areas as of 2015 have boosted LNG-fuelled coastal shipping in Northern Europe and North America. The global sulphur cap from 2020 will likely drive the use of LNG fuelled ships in other parts of the world as well.



A large white ship, likely a container ship, is shown from a front-facing perspective, moving towards the viewer on a blue ocean under a clear blue sky. The ship's bow is prominent, featuring a red stripe along the waterline and several portholes. A small dark object, possibly a tugboat, is visible in the distance to the right.

LNG AS AN INTERMEDIATE MARINE FUEL IS HEADING YOUR WAY!

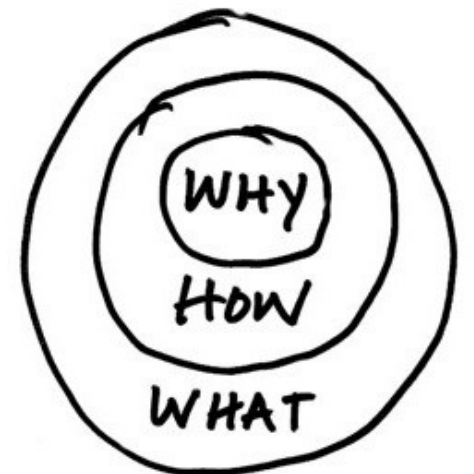
LNG working group objectives

Why? “We believe that the safe use of LNG as a marine fuel is beneficial to reducing the impact of ports and shipping industry on air quality.”

How?

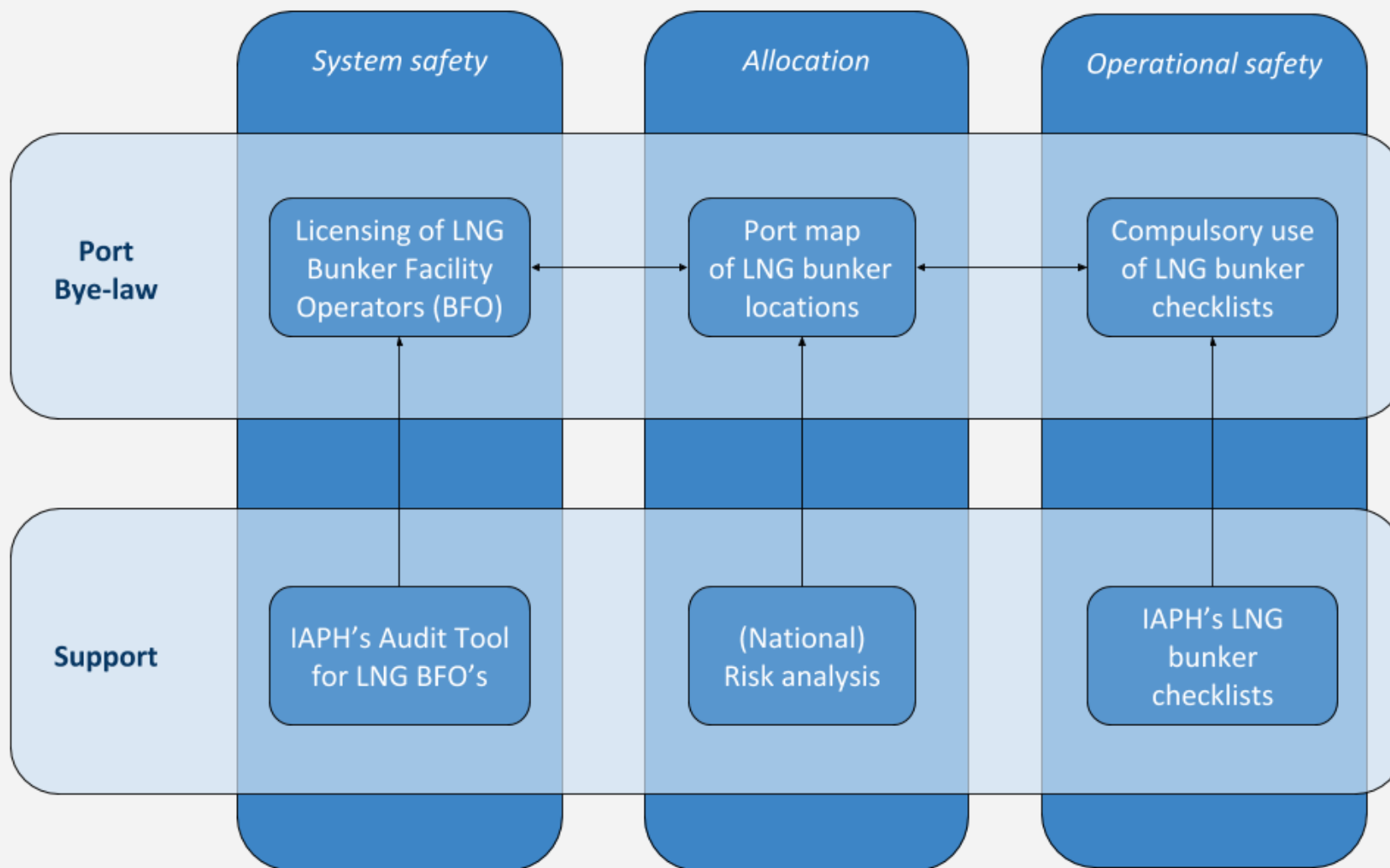
- Tools and guidelines to impose safe LNG bunker operations
- Port awareness
- Public awareness

What?



Safety domains

Awareness





LNG Bunker Checklist
Truck to Ship



LNG Bunker Checklist
Ship to Ship

PART A: Planning Stage Checklist

This part of the checklist should be completed in the planning stage of an LNG bunker operation.
It is a recommended guideline for the, in advance, exchange of information necessary for the preparation of the actual operation.

Planned date and time: _____

Port and Berth: _____

LNG receiving ship: _____

LNG bunker vessel: _____

	Check	Ship	Bunker Vessel	Terminal	Code	Remarks
1	Competent authorities have granted permission for LNG transfer operations for the specific location and time.				P	
2	The terminal has granted permission for LNG transfer operations for the specific location and time.				P	
3	Competent authorities have been notified of the start of LNG bunker operations as per local regulations.					Time notified: _____ hrs
4	The terminal has been notified of the start of LNG bunker operations as per terminal regulations.					Time notified: _____ hrs
5	Competent authorities requirements are being observed.					e.g. Port byelaws.

[Home](#) | [Bunker checklists](#) |

The IAPH LNG bunker supplier accreditation model

General

Liquefied Natural Gas (LNG) bunker operations are a new phenomenon in ports and the adjacent areas. Not all activities of LNG bunker suppliers are covered in the presently existing port safety systems such as port regulations (byelaws) and procedures. Accreditation is a well-known instrument to impose safety procedures and quality requirements for bunker companies.

An accreditation system for LNG bunker suppliers has the objective to impose safe operations, to recognize good bunker suppliers and to have a deterrent effect on malpractice in the industry. In such a system, LNG bunker suppliers have to comply with the port's accreditation qualifications in order to attain a license for performing LNG bunker operations.

The 'IAPH LNG Fuelled Vessels Working Group' has developed an LNG bunker suppliers accreditation model which ports can use as a base for their accreditation system. Details of such a system are to be filled in by the ports themselves, taking national and local requirements in to account. Accreditation should be additional to existing requirements and should not create superfluous legal requirements.

The working group advises the use of an accreditation system by ports in order to ensure safe LNG bunker operations in their port areas. A port's specific accreditation system may contain the requirements as mentioned in the model below.

Model requirements

The company:

- Has an ISO 9001, or alternative, certified quality assurance system (QAS) in place.
The quality assurance system includes, but is not limited to:
 - Status with regards to key performance indicators (KPIs); i.e. operation and customer feedback report system;
 - Environmental performance system;
 - Near misses and incident reporting system;
 - Maintenance system for LNG bunker equipment;
 - Training of personnel.
- Has a certain paid-up capital as required by the port;
- Has to be sufficiently insured;
- Agrees with an initial audit and regular audits as held by the port;
- Reports as required by the port.

The equipment:

- Has to be (ISO) certified;
- Has regular maintenance as per the quality assurance system;

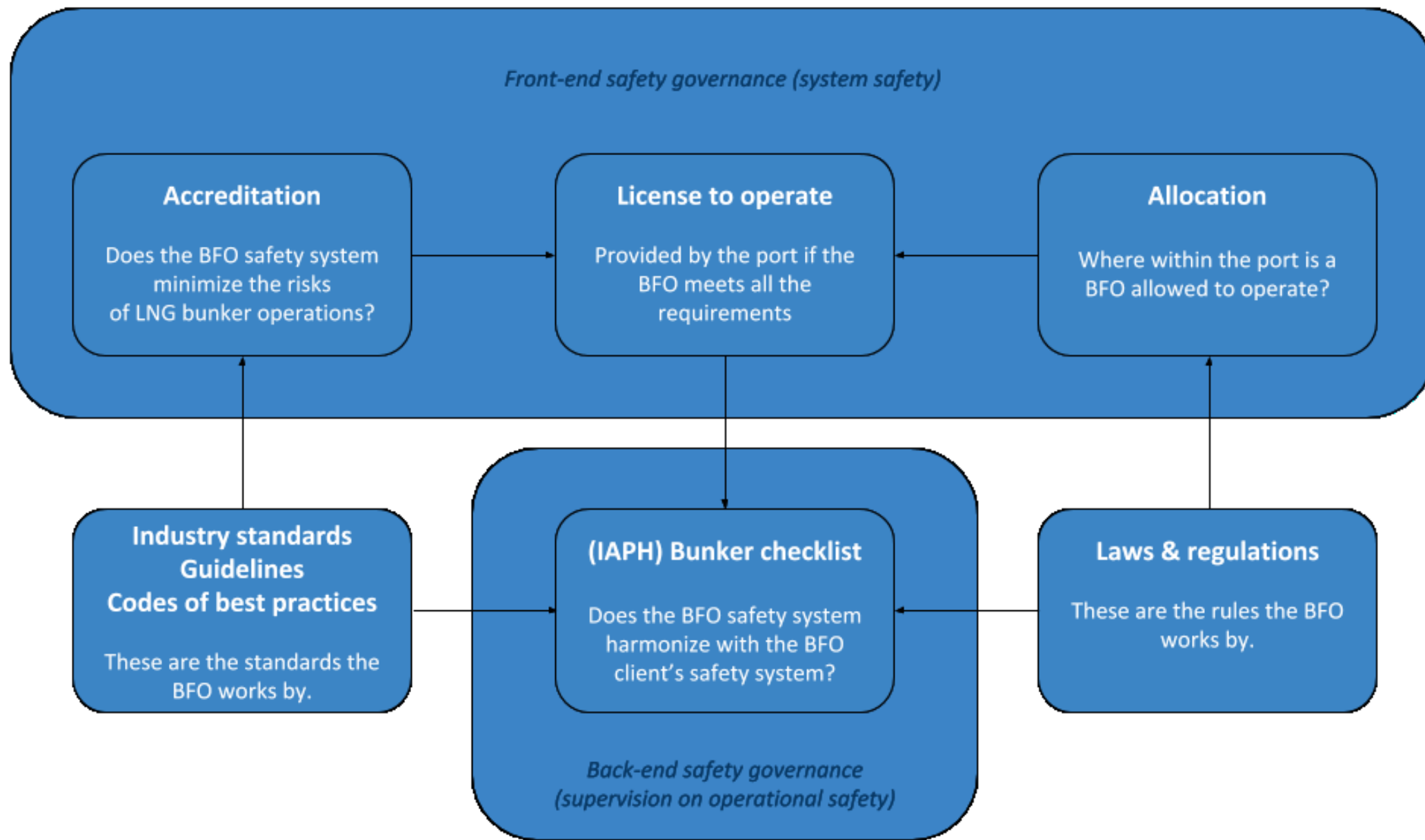
The personnel:

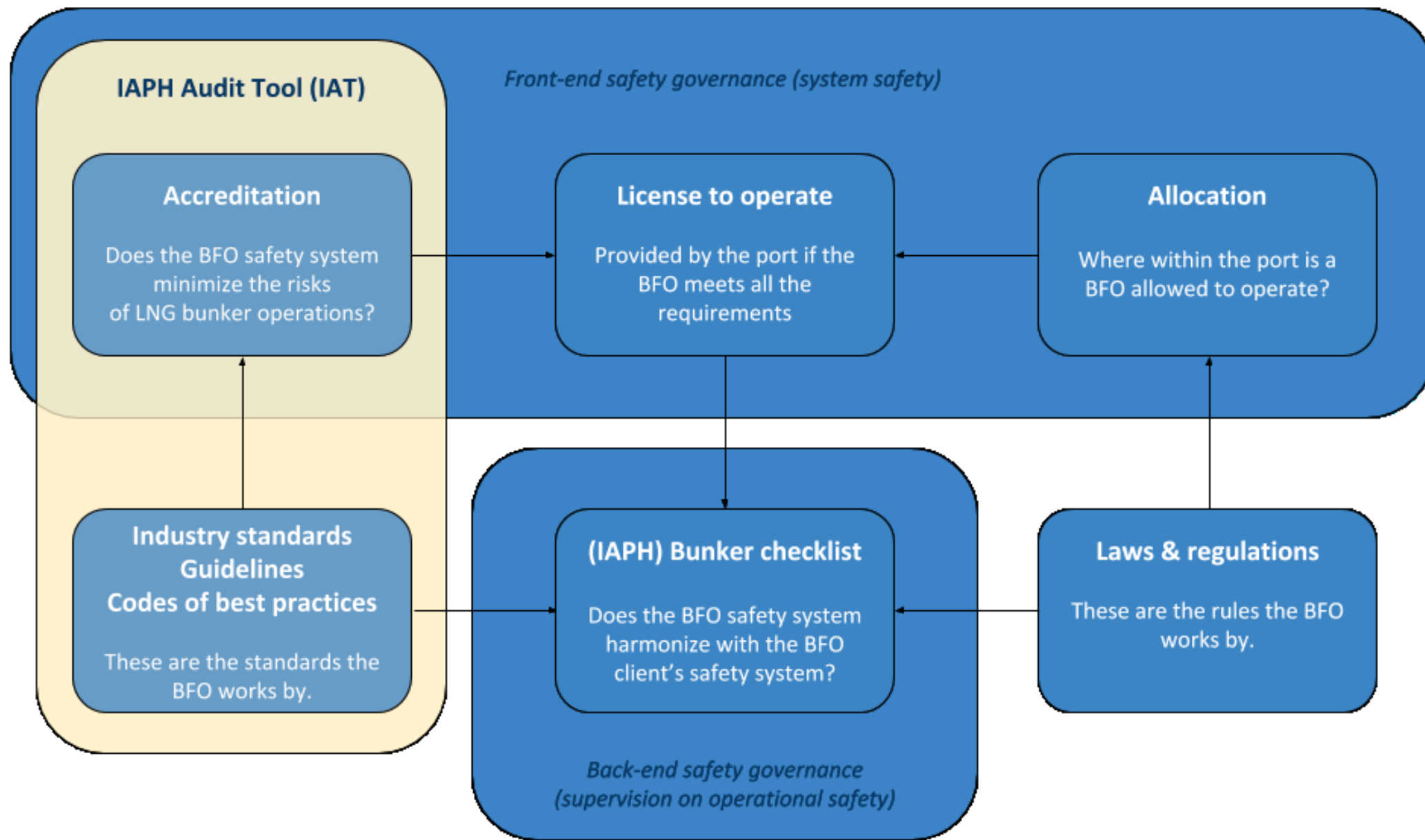
- Has to be sufficiently trained. Requirements with regards to educational topics:
 - LNG in general;
 - LNG risk characteristics;
 - LNG bunker operations risk characteristics;
 - Emergency response;
 - Operations manual of the bunker supply company in question;
 - Local requirements (*Port dependable – Port byelaws*);
- Has to be acquainted with the languages as spoken in the port (*Port dependable*).

The LNG bunker operation:

- Has been analysed by risk assessments (Hazid/Hazop/QRA);
- Has procedures that are stated in an operations manual. The manual is approved by a third party (for instance the port or a classification society);

Using an accreditation system, ports may recognize high standard LNG bunker facility operators.





IAPH accreditation scheme's two-phase approach

Phase 1

IAPH audit tool on LNG bunker facility operators



Phase 2

IAPH accreditation of LNG bunker facility operators

Mid-2018

- A port audits a bunker facility operator using the tool
- Ports may share audit information
- Peer review by other ports
- A port issues a licence to operate based on its audit results or those of another port

2019

- A port issues a bunker facility operating licence based on IAPH accreditation



Using the audit tool, ports can test the quality management system of a LNG bunker company, with a focus on safe LNG bunker operations.

- System description
- Bunker company intake form
 - Audit checklist

1. Company Mission and Quality Management System
2. Training and Competence
3. Resources and Maintenance
4. Optimal Preparations
5. Safe Operations
6. Operational Aftercare
7. QMS Responsible
8. Internal Control and Reporting

PART IV – AUDIT CHECKLIST

Safety system requirement 1 – Company Mission and Quality Management System

The company's management board has formulated a mission with regard to good performances in carrying out LNG bunker operations in a safe and environmentally friendly way through compliance with legislation and regulations and by preventing incidents or environmental incidents. In addition, the company has set objectives with respect to improving these performances and the management board works proactively to achieve these objectives. The company has a well-functioning quality management system to support its safety quality commitment.



Nr	Audit item company office	Result	Audit item LNG bunker ship	Result	Reality check (Operational audit item)	Result	Clarification and reference
1-1	Does the LNG bunker company have a manifested vision and mission that shows that the management supports an excellent safety and environmental performance during LNG bunker operations?	Yes	Is the captain acquainted with the manifested vision and mission of the <u>company</u> .	Yes	Is the crew of the LNG bunker vessel acquainted with the manifested vision and mission of the company?	Yes	This check shows whether the company is motivated to perform on a high level of safety. C1-S12-15, S5-7, S8-9
Auditor findings:							
1-2	Are the vision and mission translated into a clear policy, consisting of rules and measures, with regard to safety and environmental performance?	Yes	Is the crew of the LNG bunker vessel acquainted with the policy of the company?	Yes	Are the rules and measures that are imposed by the policy unequivocally clear to the crewmembers How many of proposed improvements (for instance by the QM) have been implemented?	Yes	C1-S12-15, S5-7, S8-9 (See <u>QM</u> in 7)
Auditor findings:							
1-3	Does the policy show a drive for continuous improvement of performance?	Yes	Is the crew of the LNG bunker vessel acquainted with the aim to continuously improve with regard to safety and environmental performance?	Yes	Can the crew point out which most recent actions were taken that aimed to improve safety and environmental performance?	Yes	Should be an integral part of the policy, the continuous improvement is explicitly considered by this check. Measures from previous accreditation audits should be discussed here as well. C1-S12-15, S5-7, S8-9
Auditor findings:							

The audit tool is unique:

- based on international standards and guidelines
(ISO, SIGTTO, IACS, ICS, SGMF, EMSA, IAPH, OCIMF, CDI)
- accepted by the international industry
(Industry Consultation meeting March 2018)

It may very well, like the IAPH bunker checklists, be a worldwide adopted tool

audit tool is a blue print for other upcoming alternative fuels and even

Is (when looking at the quality)

Ports may share audit results. Existing ports don't need to do a complete new audit on the same BFO. Administrative burden for both the ports and bunker facility operators.

"Ports of Future: Building Hubs, Accelerating Connectivity"

IAPH Audit Tool - Conclusions

- The marine fuel mix starts shifting and will be much more diverse in 2050. At this point LNG is heading your way as an intermediate fuel.
- As a port you should prepare for imposing safe LNG bunker operations.
- Recognition of good LNG bunker facility operators will have a deterrent effect on possible malpractice in the industry and hence mitigate risks.
- The LNG working group has developed tools to support this recognition:
Audit Tool for Accreditation and Operational Bunker Checklists

A large white LNG carrier ship is shown from a front-on perspective, sailing on a blue sea under a clear blue sky. The ship's bow is prominent, featuring a small crest and several portholes. The text "So, start preparing and get involved!" is overlaid in white.

So, start preparing and get involved!

Questions?

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