

# SPM Terminals for Ammonia

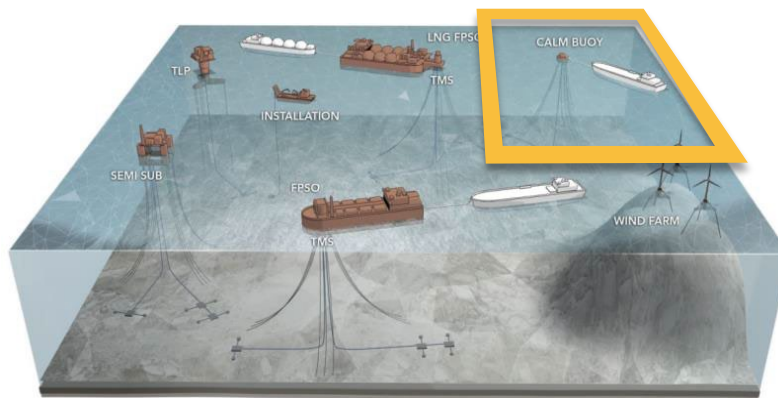
# Imodco, An SBM Offshore Company.

Imodco is the **Marine Terminals** product line of SBM Offshore.



## Imodco

Part of the SBM Offshore® Group



FPSO	Floating Production Storage and Offloading vessel	TLP	Tension-Leg Platform
LNG FPSO	Liquefied Natural Gas FPSO	Semi-Sub	Semi Submersible Platform
TMS	Turret Mooring System	CALM Buoy	Catenary Anchor Leg Mooring Buoy



### COMPANY HIGHLIGHTS

**16**  
ASSETS LEASED  
AND/OR OPERATED



**0.12**  
TOTAL RECORDABLE  
INJURY FREQUENCY RATE  
(per 200,000 hours)

**91.1%**  
FLEET PRODUCTION  
UPTIME



**7,073**  
PEOPLE

**44**  
TRAINING HOURS  
PER EMPLOYEE



**95%**  
COMPLETION RATIO FOR  
ONSHORE COMPLIANCE TRAINING  
TO DESIGNATED STAFF



DIRECTIONAL TOTAL ASSETS  
**US\$10.8 billion**

MARKET CAPITALIZATION  
**US\$2.83 billion**

UNDERLYING  
DIRECTIONAL EBITDA  
**US\$1,010 million**

CASH RETURNED  
TO SHAREHOLDERS  
**C. US\$200 million**

UNDERLYING DIRECTIONAL  
NET PROFIT  
**US\$115 million**

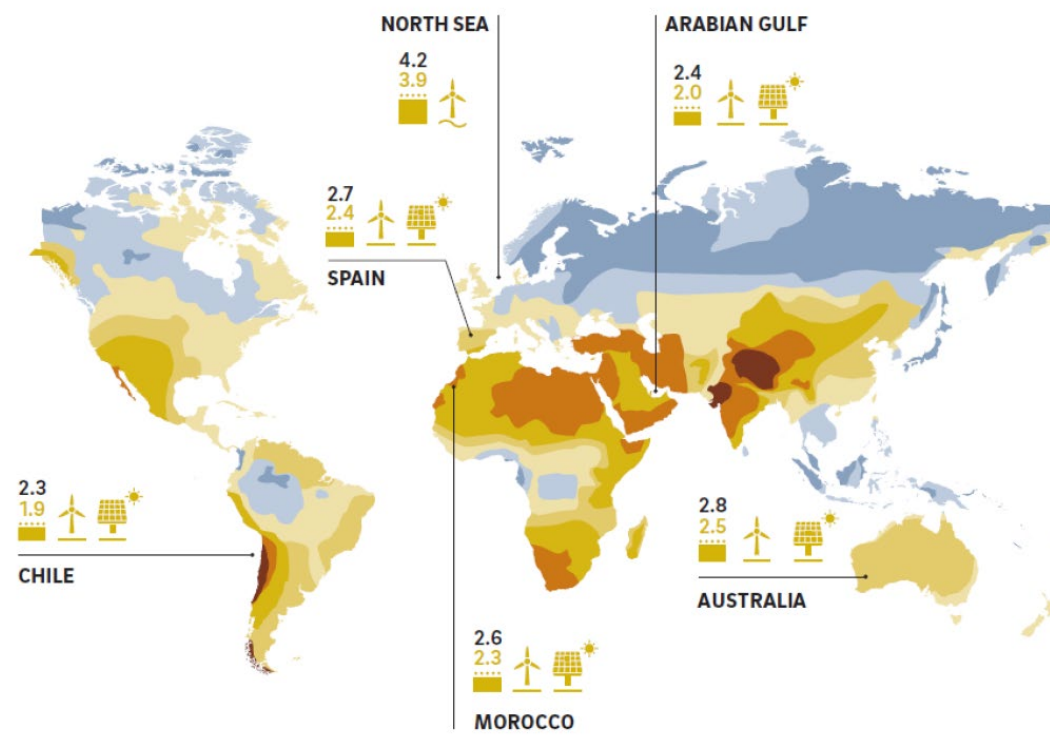
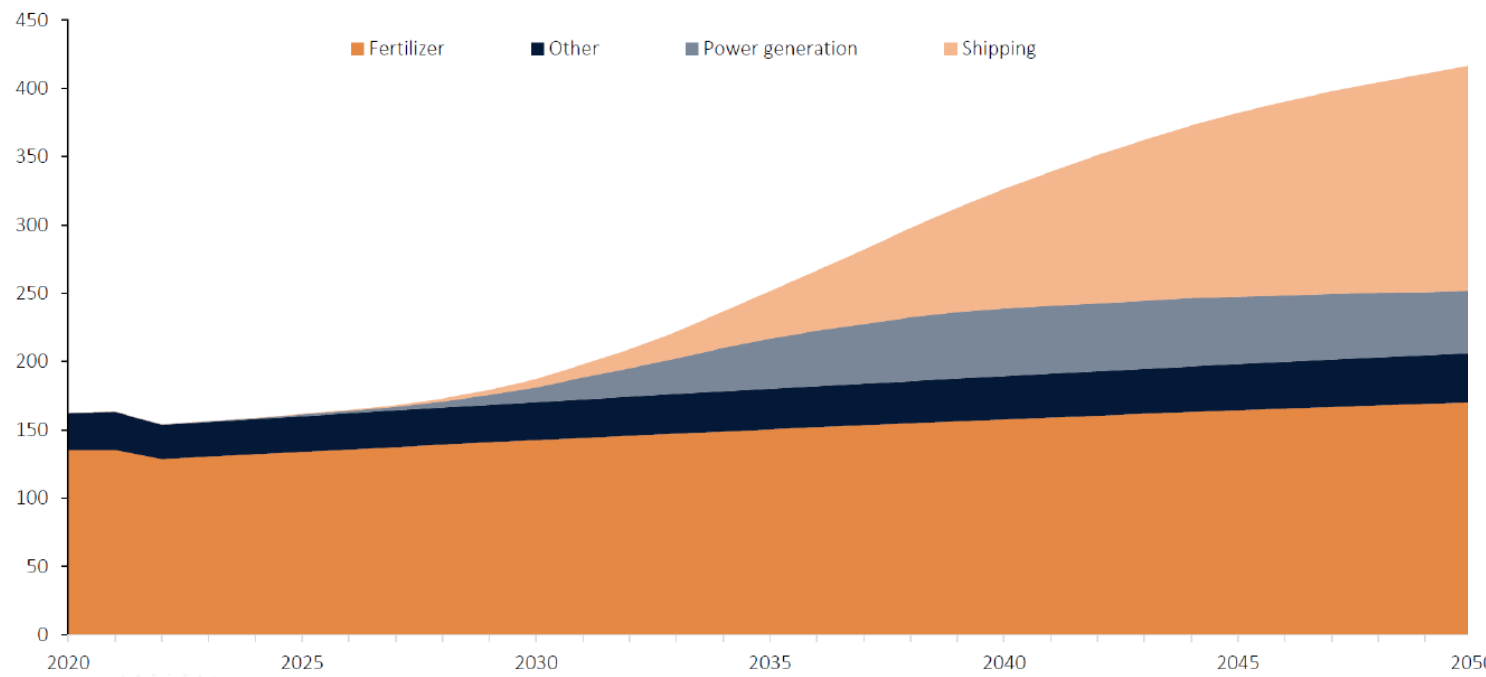
UNDERLYING EBITDA BASED ON  
IFRS ACCOUNTING POLICY  
**US\$1,209 million**

PRO-FORMA  
DIRECTIONAL BACKLOG  
**US\$30.5 billion**

UNDERLYING IFRS  
NET PROFIT ATTRIBUTABLE  
TO SHAREHOLDERS  
**US\$450 million**

# Ammonia Shipping growth by an order of magnitude

Ammonia demand by demand segments to 2050  
Million tonnes



All Market analyses converge on:

- Ammonia will triple in MTPA produced
- Most of increase will be shipped cargo

=> **Factor >10 on volume & frequency of Ammonia Cargo Transfer**

Ammonia volumes	today (low)	2050 (low)	increase Ratio (low)	today (high)	2050 (high)	increase Ratio (high)
Overall production - MTPA	150	450	3	200	600	3
Local consumption in MTPA	135	150	1.11	180	200	1.11
<b>Ammonia shipping in MTPA</b>	<b>15</b>	<b>300</b>	<b>20</b>	<b>20</b>	<b>400</b>	<b>20</b>
Typical cargo size in kT	10	80	8	25	80	3.2

Figure 3: Ammonia Shipping increase by factor 20 between today and 2050 projections





- 15-20 MTPA Ammonia transferred successfully in Ports

- Proven procedure relying on well trained personnel
- Potential SIMOPS

Powered Emergency Release Coupler (PERC) for cryogenic gas



Key principles of PERC: synchronized closure of ball valves (to isolate inventory) before parting

- For 300-400 MTPA Ammonia transfers: will it be good enough ?

- What if less trained personnel ?
- Higher probability of accidents (due to higher frequency of operations) still OK ?
- Larger size of equipment => larger leak potential => larger toxic cloud in populated areas ...

An order of magnitude change on statistics calls for a paradigm change:

- from “risk mitigation” (by procedure)”
- to “risk elimination” (move the risk offshore)

*Main risk for Ammonia Cargo Transfer = a large toxic cloud in populated/busy areas*

## Hazard Management over the Lifecycle

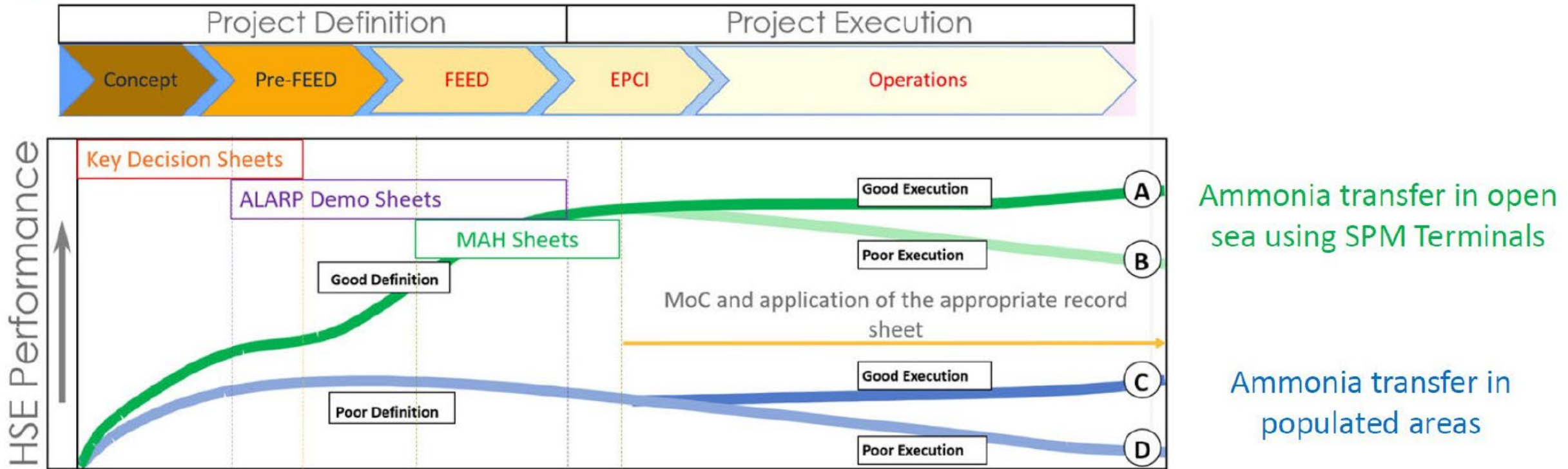
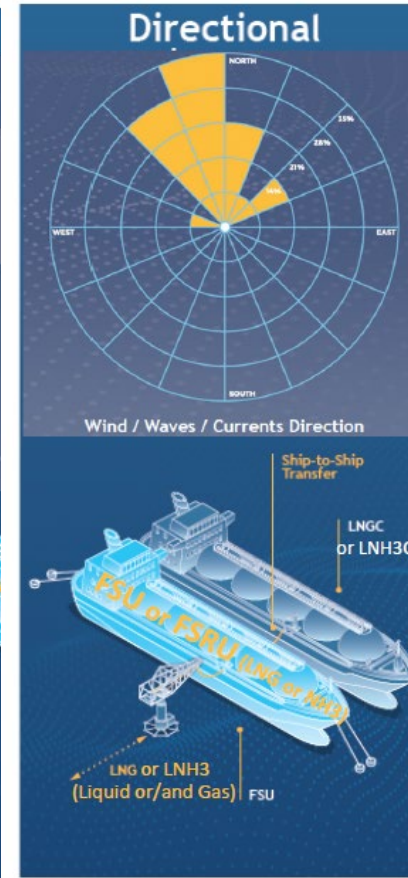
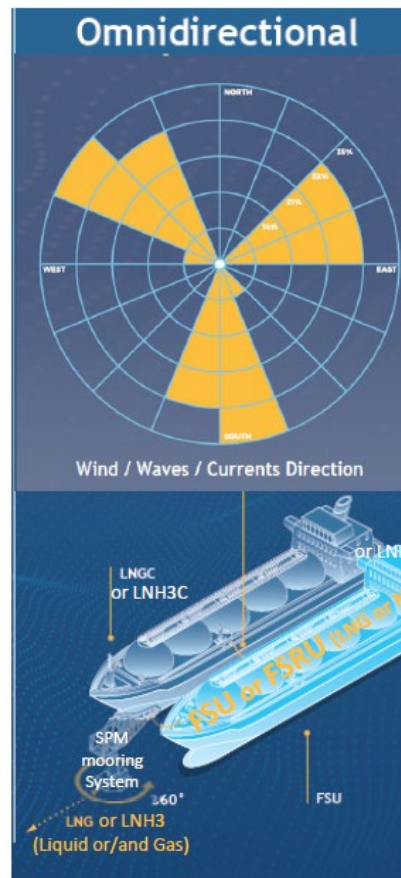
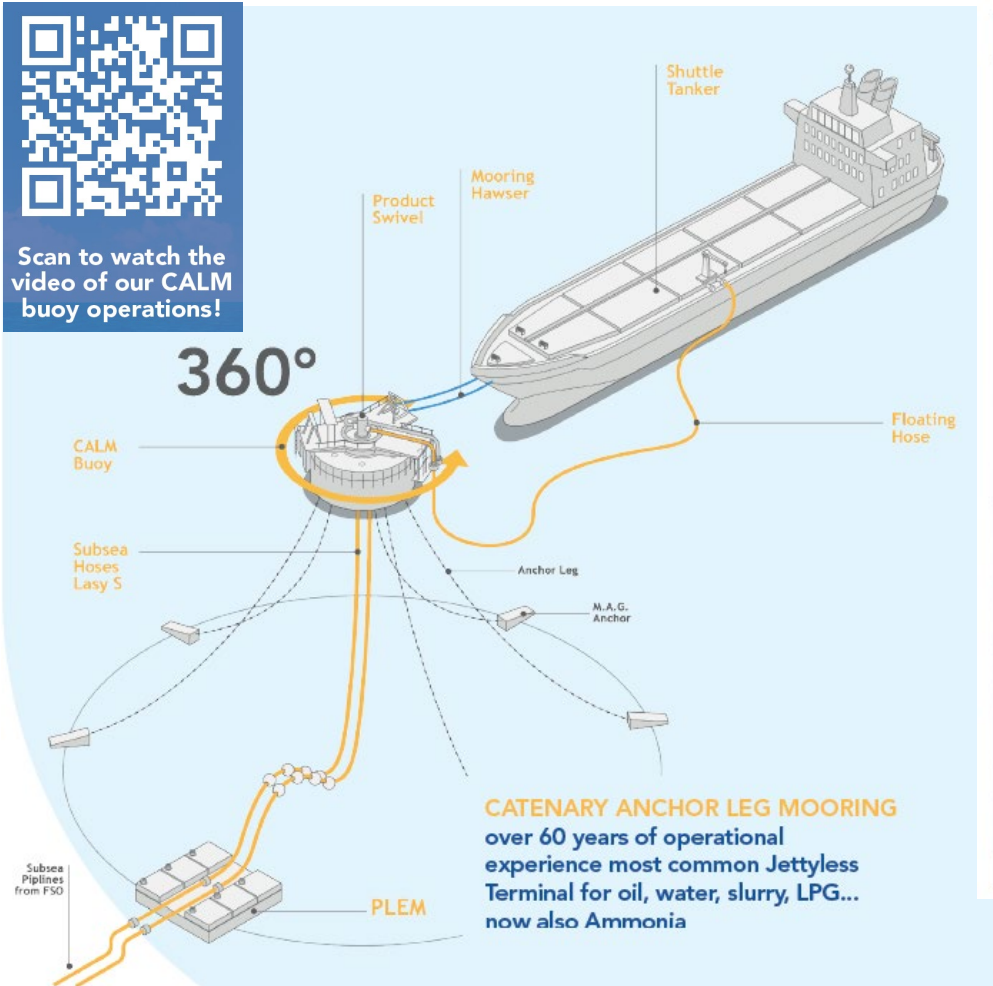


Figure 12: Safety in Design applied over project life from concept to delivery – impact on operations





## Advantages of Jetty-less Systems:

- No port
- No dredging
- Lower cost
- High Uptime
- Simpler construction
- Simpler permitting
- Shorter delivery time
- Simpler decommissioning



When a New Terminals is required and no jetty or nor quay is available, Jetty-less Terminals are most of the time, the “Best project NPV” as best CAPEX/Uptime compromise design option



