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Action No. 2016-MT-SA-0005 "Technical Study and Cost-Benefit Analysis for the Development of LNG as a Marine Fuel in Malta"

is co-financed by the European Union's Connecting Europe Facility

OFFICE OF THE PRIME MINISTER (Energy & Projects) – Malta
(Company ref: CT3017-2017)

**PROVISION OF SERVICES FOR A TECHNICAL STUDY AND
COST-BENEFIT ANALYSIS FOR THE DEVELOPMENT OF
LNG AS A MARINE FUEL IN MALTA**

**WORK PACKAGE 4 – TRAINING NEEDS ANALYSIS
FOR SHORE-SIDE PERSONNEL**

EXECUTIVE SUMMARY

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The huge development potential of Liquefied Natural Gas (LNG) as an alternative fuel for ships and the unfamiliarity with its specificities (cryogenic and flammable liquid) and associated hazards, encourage the different stakeholders to produce various guidelines and standards, and to establish training programmes for the operators in order to ensure that LNG bunkering operations will be performed in a safe and reliable manner.

To date, there are no mandatory training programmes for shore-side operators. Existing standards only provide guidance about the knowledge and skills that need to be acquired. The purpose of this work package is to provide a comprehensive training programme that covers the different aspects of LNG bunkering activities (technical, operational, safety, regulation), to ensure that the parties involved will be prepared in the best possible way.

The proposed training programme is divided into modules. Depending on the roles and responsibilities of each stakeholder, some modules are common and others are more specific. These modules can include both theoretical sessions and practical exercises.

The matrix below summarizes the various training modules to be followed based on the roles of each category of shore-side personnel involved in LNG bunkering operations

Modules \ Roles	LNG Truck		LNG Terminal		Port Authority		First Responder
	Operators	Managers	Operators	Managers	Operators	Managers	First Responders
Module 1: Fundamental knowledge about LNG							
Module 2: Existing regulation and standards							
Module 3: LNG bunkering operations							
Module 4: Safety aspects							
Module 5: Risk assessment methodologies							
Module 6: Familiarization with the LNG truck							
Module 7: Truck-to-Ship bunkering							
Module 8: Familiarization with LNG bunkering equipment							
Module 9: Terminal-to-Ship bunkering							

The main objective of this training programme is to help individuals understand their role, the roles of others, the risks involved and how to behave in case of an emergency. This is why, after each training session, the knowledge shall be tested in an examination prior to authorize individuals to work on LNG bunkering.

It is also important to ensure that knowledge of personnel involved in LNG bunkering is maintained up to date whenever new technical, operational or legal aspects are raised and to put in place regular practical exercises such as firefighting exercises or mock drills in order to ensure that personnel keep a minimum operational level.