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## Small-scale LNG port facilities, permits, risk assessment, Eastern Mediterranean, LNG bunkering

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One of the key challenges to switch to LNG as fuel era is to create “a safe passage” for LNG bunkering, by designing safe, reliable and operable LNG port facilities and operations. Eastern Mediterranean region brings step changes towards small-scale use of LNG fuel for marine transportation through the extensive groundwork developed within European co-funded Poseidon Med II project. Lloyd’s Register, as one of the leading project partners, gauges the risks, by applying efficient tools and advanced methodologies that can accurately model risks and assess potential consequences for LNG bunkering operations in each participating port. This paper features experience gathered from the strategic mapping and approach taken and implemented for all project ports, focusing on the Port of Patras in Western Greece, a port with the plan to combine LNG infrastructure and LNG bunkering operations. There, LR and project experts have undertaken onsite inspections suggesting alternative solutions for infrastructure and operations; have gained experience from the design from scratch of the Shore-to-ship LNG bunkering infrastructure; have set safety and exclusion zones as layers of defence in potential hazards; have safely navigated vessels to/from port installation running real-time simulation scenarios under various environmental conditions; have identified potential hazards and mitigation strategies addressing critical scenarios (HAZID workshops); have developed preliminary hazard & operability (HAZOP) and Quantitative Risk Assessment (QRA) analysis, to evaluate issues and risks to personnel or equipment, and have worked together with the Ministries to create the relevant national legislation for the new supply chain requirements

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