

Assumptions used by DMA

Definiton of ship types

	deadweight tonnes	engine power	LNG consumption
RoRo/RoPax ship	4,200	5,400 kW	2,700 tonnes/year
costal tanker/chemical tanker / bulk carrier	10,000 – 25,000 tonnes	8,500 kW	3,200 tonnes/year
container ship	700-800 TEU, deadweight 9,000 tonnes	8,000 kW	4,500 tonnes/year
RoRo/RoPax ship		21,000 kW	9,800 tonnes/year

Fuel prices used (EUR/tonne)

	HFO	MGO	LNG
Scenario 1	530	885	485
Scenario 2	530	885	610
Scenario 3	530	885	740

Investment costs

HFO/Scrubber

		Retrofit	New builds
Investment scrubber (incl waste storage)	€/kWmain	150	150
Investment SCR (incl installation new built)	€/kWmain+aux	45	45
Investment engine	€/kWmain		180
Investment Generators, Electric system, Propulsion, Steering	€/kWaux		240
Installation cost scrubber	€/kWmain	225	180
Installation cost SCR/EGR	€/kWmain+aux	9	

MGO

		Retrofit	New builds
Investment motor conversion/fuel cooler/fuel pumps	€	€ 130 000	100 000
Investment SCR (incl installation new built)	€/kWmain+aux	45	45
Installation cost SCR/EGR	€/kWmain+aux	9	
Investment engine	€/kWmain		180
Investment Generators, Electric system, (Propulsion, Steering)	€/kWaux		240

LNG: Spark ignition 4-stroke

		Retrofit	New builds
Investment gas engine	€/kWmain		350
Investment Generators, Electric system, (Propulsion,	€/kWaux		400

Steering)			
Investment LNG fuel gas supply system + tank	€/kWmain	245	245
Investment conversion HFO -> LNG	€/kWmain	175	
Installation cost	€/kWmain+aux	150	100

LNG: 4-stroke dual fuel

		Retrofit	New builds
Investment gas engine for dual fuel	€/kWmain		350
Investment Generators, Electric system, (Propulsion, Steering)	€/kWaux		400
Investment LNG fuel gas supply system + tank	€/kWmain	245	245
Investment conversion HFO -> LNG	€/kWmain	175	
Installation cost	€/kWmain+aux	150	100

LNG:2-stroke high-pressure diesel dual fuel

		Retrofit	New builds
Investment dual fuel engine	€/kWmain		280
Investment SCR (incl installation new built)	€/kWmain+aux	45	45
Installation cost SCR/EGR	€/kWmain+aux	9	
Investment Generators, Electric system, Propulsion, Steering	€/kWaux		400
Investment LNG fuel gas supply system + tank	€/kWmain	245	245
Investment conversion HFO --> LNG/HFO	€/kWmain	40	
Installation cost	€/kWmain+aux	150	100

The auxiliary engine is assumed to be 20 % of the main engines' installed power, apart from the spark ignition 4-stroke case where a figure of 40 % is assumed.