

# THE ROLE OF CYNERGY PROGRAMME ON THE IMPORT OF LIQUEFIED NATURAL GAS (LNG) IN CYPRUS

CEF ACTION N° 2016-EU-SA-0009 "CYnergy"



Ministry of  
Energy, Commerce, Industry and Tourism



**PRESENTATION AT CYGASTECH 2018**

**MICHALIS CHRYSAPHIS**

**HYDROCARBONS SERVICE**

**NATIONAL COMPETENT AUTHORITY FOR PCIS (NCA) / ONE STOP SHOP 4 ENERGY PCIS**

**MINISTRY OF ENERGY, COMMERCE, INDUSTRY AND TOURISM (MECIT)**

**17 OCTOBER 2018**

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- Technical and Operational Design for LNG Storage Facility & Transmission System
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- NG for Industrial & Commercial Use: Strategy, Legislation & Implementation Plan
- NG in the Maritime Sector: Strategy, Legislation & Implementation Plan
- Financing NG Implementation
- Dissemination & Public Awareness
- Action Management



CYNERGY®

# CYNERGY OVERVIEW

# SCOPE AND OBJECTIVES

- Establishment of a Natural Gas supply and distribution system in **Cyprus** by taking as a focal point the floating LNG Facility (FSRU or FSU and floating regasification unit).
- Optimization of the upstream, midstream and downstream NG facilities through:
  - The definition of the best available solution for main NG supply, storage, trade and distribution in Cyprus;
  - The exploration of the possible complementary schemes in NG supply, storage, trade and distribution;
  - The possible development of a secondary LNG market (INTRAMED) utilizing small-scale LNG bunkering vessels;
  - The investigation of the possible development of a complementary CNG waterborne supply chain;
  - The exploration of the possible consumption and distribution of NG by road transport, industrial and commercial users and the maritime sector;
  - The analysis of legal and regulatory framework for the use of NG by road transport, industrial and commercial users and the maritime sector;
  - The development of dedicated implementation plans for the introduction of NG in the sectors of energy and transport.

 **ocean finance**

15 Partners

2 CY Ministries

7 CY Partners

5 GR Partners

1 UK Partner



Ministry of  
**Energy, Commerce, Industry and Tourism**



Ministry of  
**Transport, Communications and Works**



**DECISION DYNAMICS Ltd**  
Management Consultants



**CONSORTIUM**

**Duration: 01/04/2017 – 31/03/2020**  
**Total Budget: EUR 7,470,000 | CEF Funding Rate: 60%**

# COMPLEMENTARITIES WITH OTHER TEN-T & CEF ACTIONS – CYNERGY ADDED VALUE

- **COSTA I** (2011-EU-21007-S). A TEN-T Action implemented in ES, UK, PT, DE, IT and GR, including Cyprus in the wider benefit area.
- **ARCHIPELAGO** (2013-EL-92080-S). A TEN-T Action implemented in GR.
- **POSEIDON MED I – COSTA II** (2013-EU-21019-S). A TEN-T Action implemented in HR, CY, GR, IT and SI.
  - Demand, LNG supply chain (Act. 5 input) and economic analysis for Limassol Port estimated as part of POSEIDON MED I.
  - Larnaca Port & Vassiliko Terminal studied in **CYnergy** were not under the scope of this action.
- **POSEIDON MED II** (2014-EU-TM-0673-S). A CEF Action under implementation in CY, GR and IT.
  - Demand, LNG supply chain and economic analysis for urban and electricity production uses in the city of Limassol and the Vassiliko power plant as part of POSEIDON MED II.
  - Rest of uses (road transport and industrial and commercial users for rest of island) studied in **CYnergy** are not under the scope of this action.

## CYnergy

extends the impact of these actions. The LNG facility in Vassiliko could be employed in the bunkering process of LNG fueled vessels (an objective studied as part of the actions).

added value compared to the previous actions is that it provides a holistic approach towards the use of NG by the sectors of energy and transport.

covers the complete core and comprehensive TEN-T network (roads and maritime ports) of Cyprus

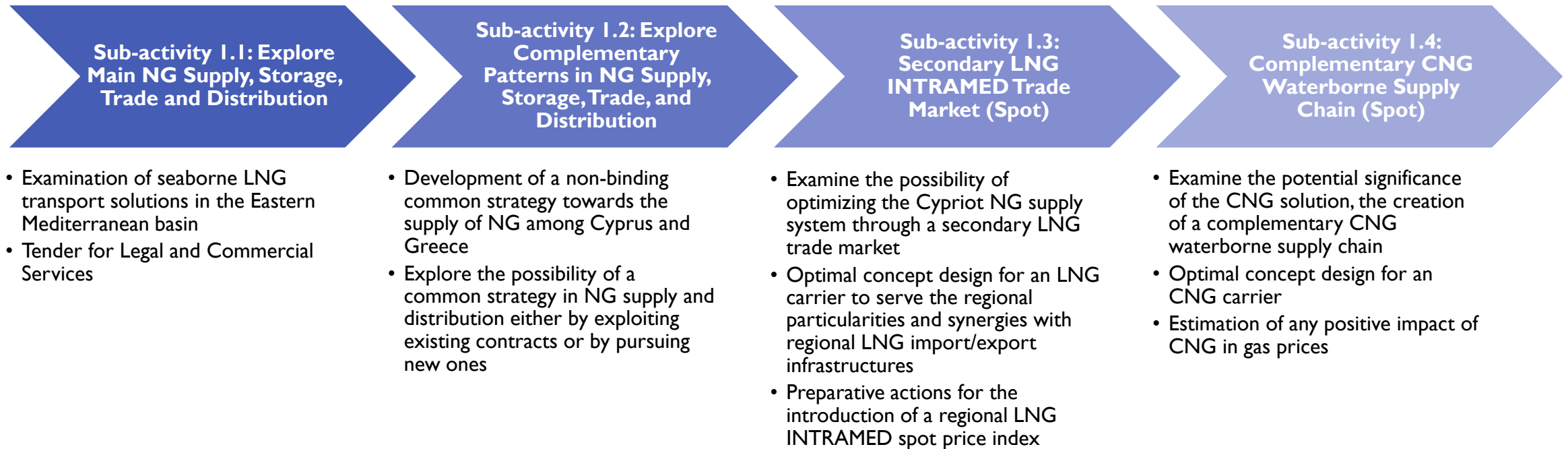
examines the use of both LNG and CNG, not solely LNG



# DESCRIPTION OF ACTIVITIES

# ACTIVITY I - UPSTREAM AND MIDSTREAM MARKET ROLL-OUT OPTIMIZATION

Activity I aims at defining and optimising the NG upstream and midstream market roll-out in Cyprus by:





# ACTIVITY I - UPSTREAM AND MIDSTREAM MARKET ROLL-OUT OPTIMIZATION



- **Leader Partner:**



- **Participating Partners:**



- **Milestones:**

- Launch of public procurement awarding procedure for selection of contractor for Legal and Commercial Services in relation to the LNG storage facility - 30/09/2017
- Contract award for the implementation of Legal and Commercial Services - 31/12/2017
- Completion of Legal and Commercial Services Contract – 31/12/2019
- NG Market Roll-out Optimisation Final Findings and Way Forward - 31/12/2019

- **Deliverables:**

- Tender for Legal and Commercial Services
- Report on Results of Tender for Legal and Commercial Services
- Report on NG Market Complementary Patterns
- Report on LNG INTRAMED Trade Market
- Report on optimal Concept Design LNG small-scale carrier in Eastern Mediterranean
- Report on Complementary CNG Waterborne Supply Chain
- Report on optimal Concept Design CNG small-scale carrier in Eastern Mediterranean
- Consolidated Report on NG Market Roll-out Optimisation final findings and way forward

# ACTIVITY I - UPSTREAM AND MIDSTREAM MARKET ROLL-OUT OPTIMIZATION

Activity	Sub-activity		Start	End	Partner
Upstream and Midstream Market Roll-out Optimisation	I.1	Explore Main NG Supply, Storage, Trade and Distribution	01.04.2017	31.12.2019	DEFA
					OF
					TG
					MECIT
					MTCW
	I.2	Explore Complementary Patterns in NG Supply, Storage, Trade, and Distribution	01.04.2017	31.12.2018	DEPA
					DEFA
	I.3	Secondary LNG INTRAMED Trade Market (Spot)	01.04.2017	31.12.2018	OF
					GL
					TG
					HYD
	I.4	Complementary CNG Waterborne Supply Chain (Spot)	01.01.2018	31.12.2019	HYD
					OF
GL					
					HL

# ACTIVITY 2 - TECHNICAL AND OPERATIONAL DESIGN FOR LNG STORAGE FACILITY & NATURAL GAS SYSTEM

Activity 2 aims at enhancing the technical and environmental permitting maturity of the technical solution resulting from DEFA' study re “LNG Supply Options”.

## Sub-activity 2.1: Technical Design & Permits

### •LNG Storage Facility: Identification of the optimal infrastructure solution

- Strategic Environmental Assessment on the LNG Storage Facility
- Preliminary Safety Study on the LNG Storage Facility
- Environmental and Social Impact Assessment on the LNG Storage Facility
- Cost Benefit Analysis on the LNG Storage Facility
- Supporting Engineering Studies for the relevant supporting infrastructure
- Basic and Final Construction Engineering Design for the relevant supporting infrastructure

### •Natural Gas System Development

- Tender for the Front End Engineering Design (Engineering Design of the supply system from the LNG Storage Facility to the power stations and to the Independent Producers) and Report on the results of the Tender

## Sub-activity 2.2: Ship-to-Facility (STF) Operations

### • Risk Assessment for the Ship-to-Facility (STF) Operations of the LNG Storage Facility. The Risk Assessment will be divided into the:

- Wave Simulation Study
- Hazard Identification/ Hazard and Operability (HAZID/HAZOP) Study
- Ship Navigation Simulation
- Quantitative Risk Assessment Study.

# ACTIVITY 2 - TECHNICAL AND OPERATIONAL DESIGN FOR LNG STORAGE FACILITY & TRANSMISSION SYSTEM



■ **Leader Partner:**



■ **Participating Partners:**



■ **Milestones:**

- Launch of public procurement awarding procedure for selection of contractor for Natural Gas System Development (FEED) - 30/06/2017
- Contract award for the implementation of Natural Gas System Development (FEED)- 30/09/2017
- Completion of Natural Gas System Development (FEED) Contract - 30/06/2019
- Strategic Environmental Assessment, Environmental and Social Impact Assessment and Preliminary Safety Study for floating LNG Facilities – 30/06/2019
- Supporting Engineering Studies, Preliminary Engineering Design Studies, Final Construction Engineering Design for floating LNG Facilities supporting infrastructure – 30/06/2019

■ **Deliverables:**

- Tender for Natural Gas System Development (including FEED)
- Report on Results of Tender for Natural Gas System Development (including FEED)
- Strategic Environmental Assessment, Environmental and Social Impact Assessment and preliminary Safety Study for the LNG Facility
- Cost-Benefit Analysis of the LNG Facility
- Supporting Engineering Studies, Preliminary Engineering Design Studies and Final Construction Engineering Design for LNG Facility relevant supporting infrastructure
- Report on STF Operations Risk Assessment

# ACTIVITY 2 - TECHNICAL AND OPERATIONAL DESIGN FOR LNG STORAGE FACILITY & TRANSMISSION SYSTEM

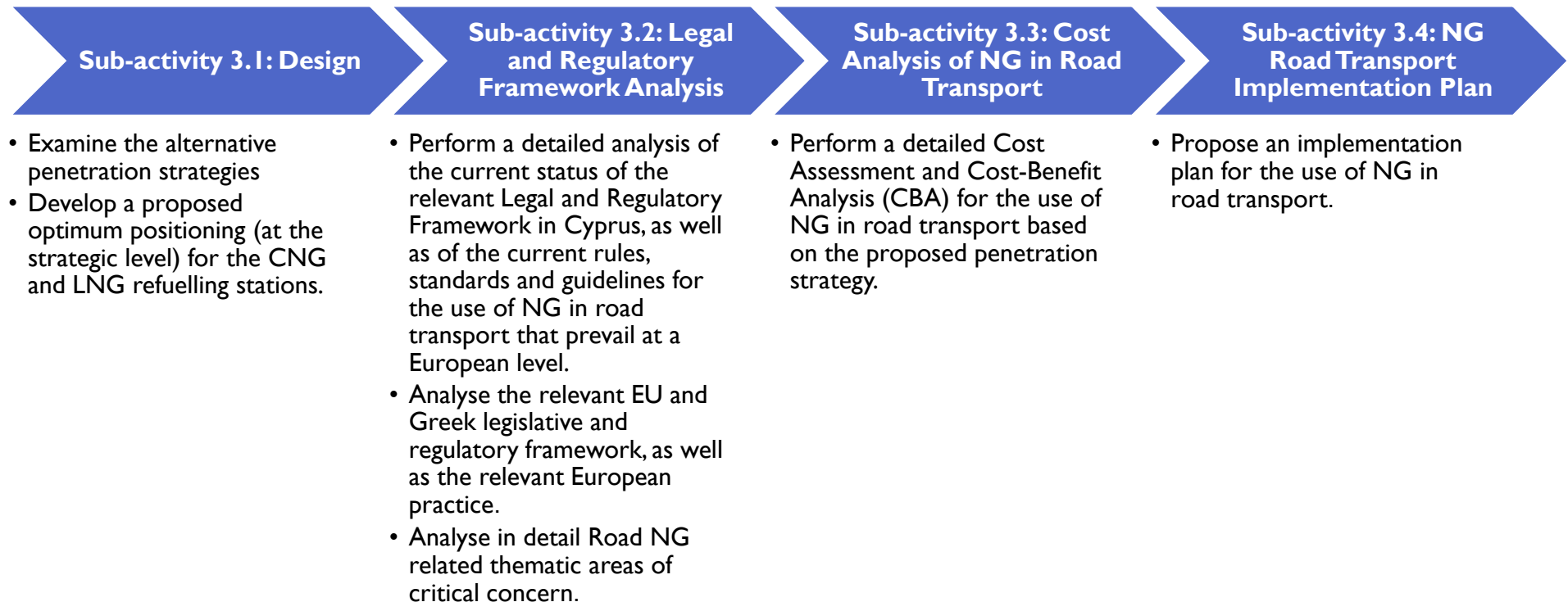
Activity	Sub-activity		Start	End	Partner
Technical and Operational Design for LNG Storage Facility & Transmission System	2.1	Technical Design & Permits	01.04.2017	30.06.2019	DEFA
					RGN
					DTM
					OF
					GL
					TG
					MECIT
	2.2	Ship-to-Facility (STF) Operations	01.04.2017	30.06.2019	HL
					GL
					TG
CPA					

# ACTIVITY 3 - NG IN ROAD TRANSPORTATION: DESIGN, LEGISLATION & IMPLEMENTATION PLAN

Activity 3 aims at performing **relevant studies for the successful penetration** of CNG and LNG in freight and passenger mobility at the urban, peri-urban, regional and national context.

Many challenges that require this activity:

1. The National Transport Plan is to be tendered
2. Cities have tendered out SUMP
3. Growing demand due to cost savings



# ACTIVITY 3 - NG IN ROAD TRANSPORTATION: DESIGN, LEGISLATION & IMPLEMENTATION PLAN



■ **Leader Partner:**  **DECISION DYNAMICS Ltd**  
Management Consultants

■ **Participating Partners:**



■ **Milestones:**

- Alternative implementation strategies for optimum positioning of CNG and LNG truck refueling stations – 30/06/2018
- Legal and Regulatory Framework Detailed Analysis for the introduction of NG in the Road Sector – 30/06/2019
- Cost Analysis for the introduction of NG in the Road Sector – 31/12/2018
- NG Road Transport Implementation Plan – 30/06/2019

■ **Deliverables:**

- Penetration Strategies for NG Road Transport Use and Proposal of CNG and LNG Refueling Stations Networks
- Legal and Regulatory Framework Detailed Analysis for NG Road Transport Use
- Cost Analysis for NG Road Transport Use
- Implementation Roadmap for NG Road Transport Use

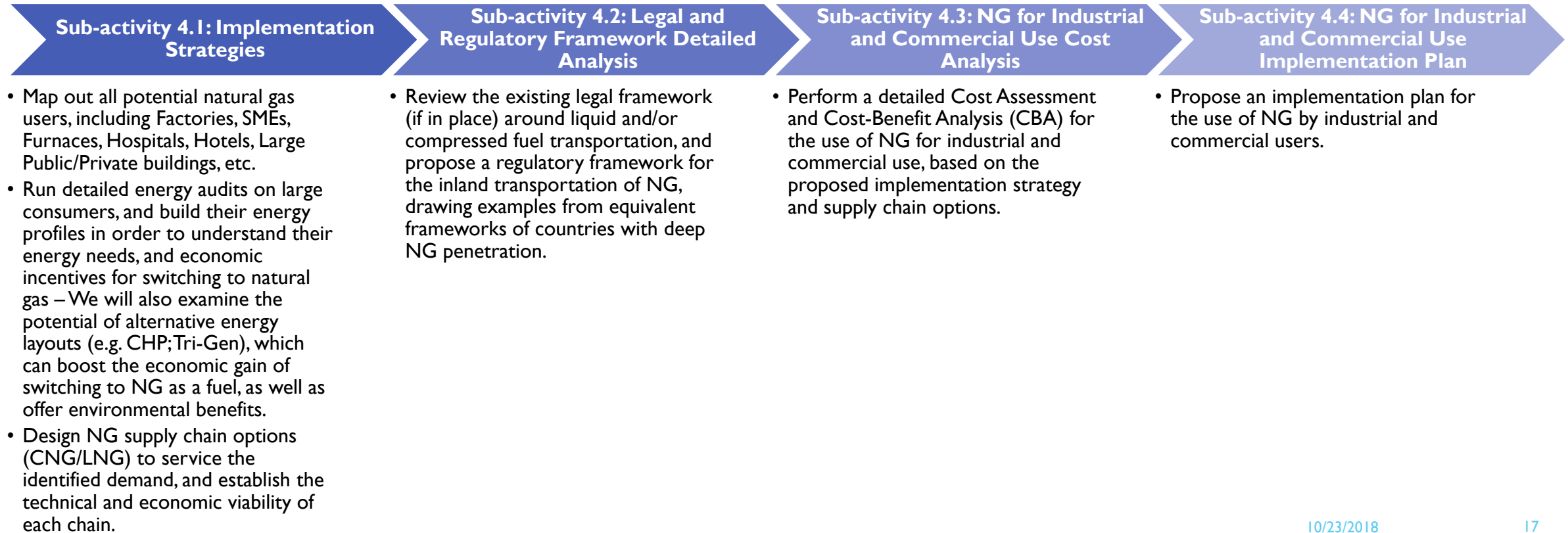
# ACTIVITY 3 - NG IN ROAD TRANSPORTATION: DESIGN, LEGISLATION & IMPLEMENTATION PLAN

Activity	Sub-activity		Start	End	Partner
NG in Road Transportation: Design, Legislation & Implementation Plan	3.1	Design	01.06.2017	30.06.2018	DDL
					DEPA
					MTCW
	3.2	Legal and Regulatory Framework Detailed Analysis	01.06.2017	30.06.2019	DEPA
					MTCW
					DEFA
					MECIT
	3.3	NG Road Transport Cost Analysis	01.01.2018	31.12.2018	OF
					MTCW
	3.4	NG Road Transport Implementation Plan	01.01.2018	30.06.2019	DEPA
					BNET
					MTCW
OF					



# ACTIVITY 4 - NG FOR INDUSTRIAL & COMMERCIAL USE: STRATEGY, LEGISLATION & IMPLEMENTATION PLAN

Activity 4 aims to examine the alternative NG penetration strategies and to review the suitability of different NG supply chains (CNG or LNG) for individual users and the country as a whole.



# ACTIVITY 4 - NG FOR INDUSTRIAL & COMMERCIAL USE: STRATEGY, LEGISLATION & IMPLEMENTATION PLAN



■ **Leader Partner:** 

■ **Participating Partners:**

 Ministry of  
Transport, Communications and Works

 Ministry of  
Energy, Commerce, Industry and Tourism

 ocean finance  bunkernet

 cygas

 AEGA  
PUBLIC GAS CORPORATION S.A.

■ **Milestones:**

- Alternative supply chain penetration strategies for Industrial & Commercial Use of NG – 30/06/2018
- Legal and Regulatory Framework Detailed Analysis for Industrial & Commercial Use of NG – 30/06/2019
- Cost Analysis for Supply Chains of Industrial & Commercial Use of NG – 31/12/2018
- NG Industrial & Commercial Use Implementation Roadmap – 30/06/2019

■ **Deliverables:**

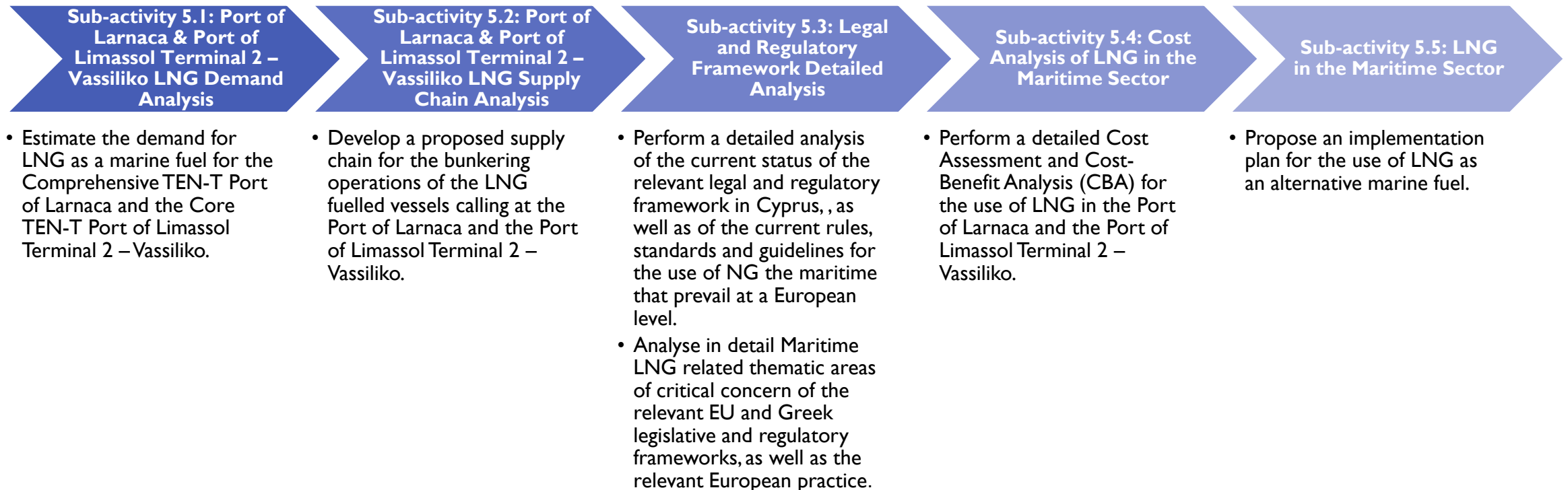
- Penetration Strategies for NG Industrial & Commercial Use
- Supply chain review and comparison of each supply chain option (CNG/LNG) on its merits and suitability
- Legal and Regulatory Framework Detailed Analysis for NG Industrial & Commercial Use
- Cost Analysis of NG supply chains (CNG/LNG) for Industrial & Commercial Use
- Implementation Roadmap for NG Industrial & Commercial Use

# ACTIVITY 4 - NG FOR INDUSTRIAL & COMMERCIAL USE: STRATEGY, LEGISLATION & IMPLEMENTATION PLAN

Activity	Sub-activity		Start	End	Partner
NG in Road Transportation: Design, Legislation & Implementation Plan	4.1	Implementation Strategies	01.06.2017	30.06.2018	FCN
					DEPA
					MECIT
	4.2	Legal and Regulatory Framework Detailed Analysis	01.06.2017	30.06.2019	DEPA
					DEFA
					MECIT
					MTCW
	4.3	NG for Industrial and Commercial Use Cost Analysis	01.01.2018	31.12.2018	OF
	4.4	NG for Industrial and Commercial Use Implementation Plan	01.01.2018	30.06.2019	FCN
					DEPA
					OF
					MECIT
DEFA					

# ACTIVITY 5 - NG IN THE MARITIME: STRATEGY, LEGISLATION & IMPLEMENTATION PLAN

Activity 5 aims at performing all the relevant studies for the penetration of LNG as a marine fuel in the Port of Larnaca & Port of Limassol Terminal 2 – Vassiliko.



# ACTIVITY 5 - NG IN THE MARITIME: STRATEGY, LEGISLATION & IMPLEMENTATION PLAN



■ **Leader Partner:**  **ocean finance**

■ **Participating Partners:**



## ■ **Milestones:**

- Port of Larnaca & Port of Limassol Terminal 2 –Vassiliko LNG Demand and Supply Chain Analysis - 30/06/2018
- Legal and Regulatory Framework Detailed Analysis for Maritime Use of NG - 30/06/2019
- Cost Analysis for Maritime Use of NG - 31/12/2018
- NG in the Maritime Implementation Roadmap - 30/06/2019

## ■ **Deliverables:**

- Report on Port of Larnaca and Port of Limassol Terminal 2 –Vassiliko LNG Demand and Supply Analysis
- Legal and Regulatory Framework Detailed Analysis for NG Maritime Use
- Cost Analysis for NG Maritime Use
- Implementation Roadmap for NG Maritime Use

# ACTIVITY 5 - NG IN THE MARITIME: STRATEGY, LEGISLATION & IMPLEMENTATION PLAN

Activity	Sub-activity		Start	End	Partner
NG in the Maritime: Strategy, Legislation & Implementation Plan	5.1	Port of Larnaca & Port of Limassol Terminal 2 – Vasilico LNG Demand Analysis	01.06.2017	31.12.2017	BNET
					OF
					GL
					TG
					CPA
	5.2	Port of Larnaca & Port of Limassol Terminal 2 – Vasilico LNG Supply Chain Analysis	01.01.2018	30.06.2018	DEPA
					OF
					BNET
					GL
					TG
	5.3	Legal and Regulatory Framework Detailed Analysis	01.06.2017	31.12.2017	CPA
					HL
					HYD
					BNET
					GL
					TG

# ACTIVITY 5 - NG IN THE MARITIME: STRATEGY, LEGISLATION & IMPLEMENTATION PLAN

Activity	Sub-activity		Start	End	Partner
NG in the Maritime: Strategy, Legislation & Implementation Plan	5.3	Legal and Regulatory Framework Detailed Analysis	01.06.2017	31.12.2017	CPA
					DEFA
					MECIT
					MTCW
	5.4	NG in the Maritime Cost Analysis	01.01.2018	30.06.2018	OF
					DDL
					GL
					TG
	5.5	NG in the Maritime Sector	01.06.2017	30.06.2019	CPA
					BNET
					DDL
					DEPA
					OF
					GL
					TG
					CPA

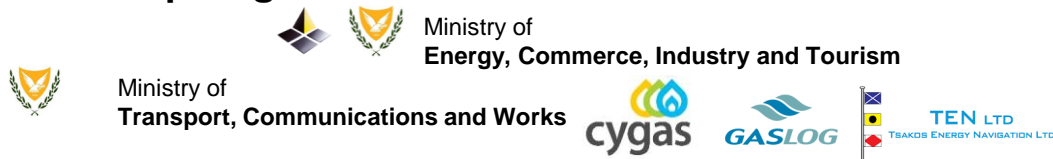
# ACTIVITY 6 - FINANCING NG IMPLEMENTATION

Activity 6 aims at preparing the proposed financing structures for CAPEX requirements related to switching to alternative energy consumption modes.

The objective is to examine the development of suitable investment schemes based on the particular characteristics of the investments proposed under the previous activities and utilize the available and upcoming innovative financial structures for preparing the business cases of these proposed investments.

■ **Leader Partner:**  ocean finance

■ **Participating Partners:**



■ **Milestones:**

- Project and Sub-projects CAPEX Definition – 30/06/2019
- Financial Structures Development – 29/02/2020

■ **Deliverables:**

- Final report on Financial Structures



# ACTIVITY 6 - FINANCING NG IMPLEMENTATION

Activity	Start	End	Partner
Financing NG Implementation	01.03.2018	29.02.2020	OF
			GL
			TG
			DEFA
			MECIT
			MTCW

# ACTIVITY 7 - DISSEMINATION & PUBLIC AWARENESS

Activity 7 aims at promoting the use of NG as an alternative fuel, by both the energy and transport sectors, towards the relevant stakeholders. This activity targets public awareness increase and enhancement of the envisaged benefits of the use of NG as an alternative fuel from an environmental, societal and economic viewpoint.



- **Milestones:**
  - Final event for raising public awareness / disseminating project - 29/01/2020
  - Completion of Dissemination Plan - 29/02/2020
- **Deliverables:**
  - Report on the results of the Dissemination Plan execution

■ **Leader Partner:**  **bunkernet**

■ **Participating Partners:**

 Ministry of  
Transport, Communications and Works

 **TEN LTD**  
TSAKOS ENERGY NAVIGATION LTD

 **GASLOG**

 **ocean finance**

 **cygas**

 Cyprus  
Ports Authority

 Ministry of  
Energy, Commerce, Industry and Tourism

 **AEGA**  
KUBIC GAS CORPORATION S.A.

 **L**  
Lloyd's  
Register

 **FCNGAS**

 **hydrus**  
group

 **ROGAN ASSOCIATES S.A.**

 **DECISION DYNAMICS Ltd**  
Management Consultants

# ACTIVITY 7 - DISSEMINATION & PUBLIC AWARENESS

Activity	Start	End	Partner
Dissemination & Public Awareness	01.04.2017	29.02.2020	BNET
			GL
			TG
			MECIT
			HL
			CPA
			DDL
			DEFA
			DEPA
			OF
			FCN
			HYD
			MTCW
RGN			

# ACTIVITY 7 - DISSEMINATION & PUBLIC AWARENESS

CONFERENZAGNL  
2017  
EXPOGNL

CONFERENZAGNL 2017

• 11 MAY 2017, NAPOLI

• PLENARY SESSION: POLICIES AND PROGRAMS FOR ACTION IN THE EURO-MED AREA – MINISTERIAL ROUND TABLE

Annual Conference

EURASIAN  
NATURAL GAS  
INFRASTRUCTURE

EURASIAN NATURAL GAS INFRASTRUCTURE  
3<sup>RD</sup> ANNUAL CONFERENCE

• 30-31 MAY, MILANO

CHECK MORE UPDATES ON CYNERGY WEBSITE

[www.cynergyproject.eu](http://www.cynergyproject.eu)

The first CYnergy dissemination event took place in the 29<sup>th</sup> of September 2017 in Cyprus in collaboration with Poseidon Med II.

The second CYnergy dissemination event took place in the 16<sup>th</sup> of June 2018 in Cyprus



# ACTIVITY 8 – ACTION MANAGEMENT

Activity 8 is a supporting activity aiming to cover the management of the proposed action. It includes adequate coordination tasks, control procedures, quality management, risk management and monitoring mechanisms.

Two Consortium members will have been designated to the roles of the Project Manager (PM) and the Technical Coordinator (TC) respectively.

- **Leader Partner:**  ocean finance
- **Participating Partners:** ALL PARTNERS



- **Milestones:**
  - Final report on Conclusion of the Project – 31/03/2020
- **Deliverables:**
  - Report on Action Status
  - Report on PCC Meetings Results
  - Report on TCC Meeting Results
  - Report on Conclusion of the Project

# ACTIVITY 8 – ACTION MANAGEMENT

Activity	Start	End	Partner
Action Management	01.04.2017	31.03.2020	OF
			DEFA
			DEPA
			FCN
			RGN
			BNET
			DDL
			DTM
			GL
			HL
			HYD
			TG
			CPA
			EMS
			MECIT
MTCW			

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