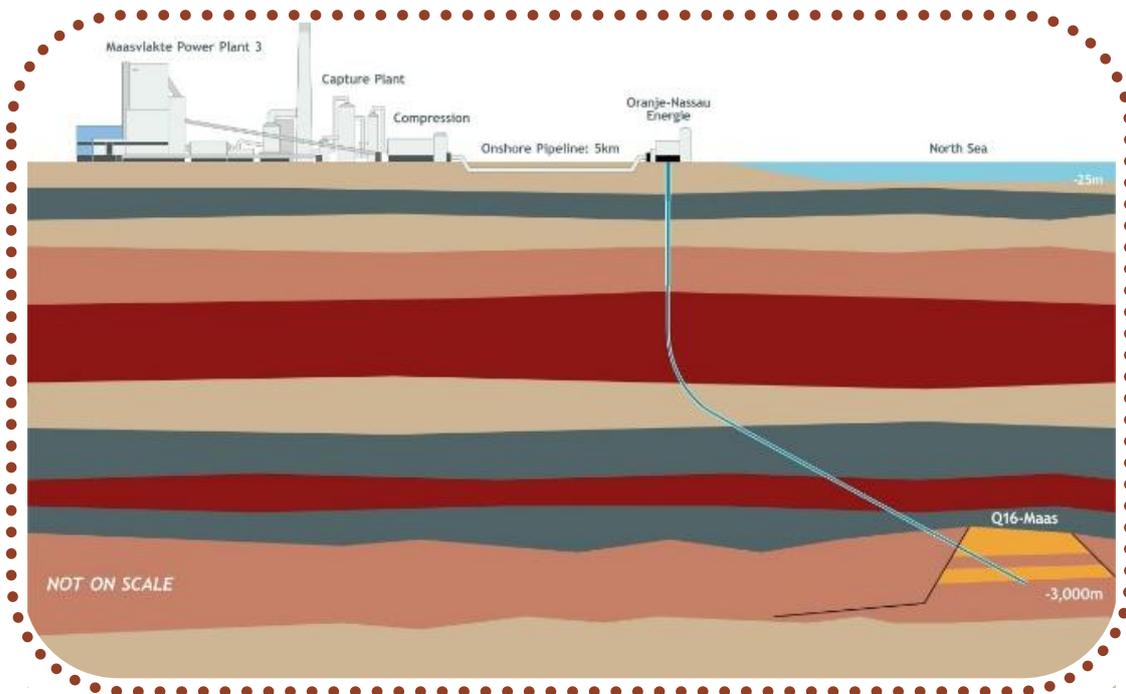


# Public Close-Out Report Governance and Compliance

## Rotterdam Opslag en Afvang Demonstratieproject



### Maasvlakte CCS Project C.V.

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Author: : Rob Toonssen, Andy Read

S U P P O R T E D B Y



Government of the Netherlands



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## Public Close-Out Report 7 of 11: Governance and Compliance

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Hans Schoenmakers  
 Director Stakeholder Management  
 Maasvlakte CCS Project C.V.

Telephone : +31 (0)6 5346 9885  
 E-mail : Hans.Schoenmakers@uniper.energy  
 Project website address : [www.road2020.nl](http://www.road2020.nl)

### Index of ROAD Public Close-out Reports

| No | Title                            | Scope  |
|----|----------------------------------|--|
| 1  | Overview                         | Introduce and summarise the public close-out reports.  |
| 2  | Capture and Compression          | Technical report covering capture, compression and power plant integration.  |
| 3  | Transport                        | Technical report covering CO <sub>2</sub> pipeline transport.  |
| 4  | CO <sub>2</sub> Storage          | Both technical and commercial aspects of CO <sub>2</sub> storage for ROAD. Subsurface work required to demonstrate permanent storage is described. |
| 5  | Risk Management                  | The risk management approach used by ROAD.   |
| 6  | Permitting and Regulation        | Description of the regulatory and permitting framework and process for the ROAD project, including required changes to regulations.                |
| 7  | <b>Governance and Compliance</b> | <b>Company structure and governance for Maasvlakte CCS Project C.V., the joint venture undertaking the ROAD Project</b>                            |
| 8  | Project Costs and Funding        | A presentation of the projected economics of the project, with both projected income and costs.  |
| 9  | Finance and Control              | Description of the financial and control systems, including the costs incurred and grants claimed.   |
| 10 | Knowledge Sharing                | Outline of the Knowledge Sharing & Dissemination plan as developed by the ROAD project and completed KS deliverables and actions                   |
| 11 | Public Engagement                | Description of how ROAD organized and managed the Public Engagement process.   |

Key Words and Glossary

| Key Words / Abbreviations         | Meaning of Explanation  |
|-----------------------------------|---|
| AoA                               | Articles of Associations (“statuten”)   |
| Article 8 of Directive 2004/18/EC | European tendering requirements   |
| CCS                               | Carbon Capture and Storage  |
| Director A                        | Representative from E.ON Benelux/Uniper Benelux                               |
| Director B                        | Representative from GdF Suez Nederland/Engie Nederland                        |
| EC                                | European Commission   |
| EC-grant agreement                | Original EEPR grant facility and amendments                                   |
| EEPR                              | European Energy Programme for Recovery  |
| FID                               | Final Investment Decision   |
| Finance Manual                    | Procedures for accounting, controlling and reporting and associated processes |
| GCCSI                             | Global CCS Institute (Australian)   |
| MB                                | Management Board  |
| MPP3                              | Maasvlakte Power Plant 3 from Uniper  |
| Parent Companies                  | (E.ON) Uniper Benelux BV + (GdF Suez) ENGIE Nederland BV                      |

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# 1. Management Summary

### *Project Summary*

This report summarises the company governance and compliance structures used by the CCS demonstration project “ROAD”. The ROAD Project (Rotterdam Opslag en Afvang Demonstratieproject) was one of the largest integrated carbon capture and storage (CCS) projects in the world, aiming to install carbon capture on a coal-fired power station in Rotterdam and store the CO<sub>2</sub> in an empty off-shore gas-field. The project ran from 2009 to 2017 and was a joint project of Uniper (formerly E.ON) and Engie (formerly Electrabel and GDF Suez).

To deliver the ROAD Project, special purposes vehicles have been founded - the legal entities Maasvlakte CCS Project CV and Maasvlakte CCS Project BV. This structure has been chosen to achieve limited recourse to the Parent Companies and to enable Parent Companies to set-off project losses against their profits to optimize tax-positions.

The project also had financial support from the EU EEPR program, the Dutch Government, the Port of Rotterdam and the GCCSI.

In the first phase of the project, 2009-2012, the project was developed to final investment decision (FID) based on using the TAQA P18-4 gas-field as the CO<sub>2</sub> storage location. This required a pipeline of approximately 25km from the capture location (Uniper’s coal-fired Maasvlakte Power Plant – MPP3), about 5km onshore and 20km off-shore.

Unfortunately, the collapse in the carbon price undermined the original business case, and in 2012 a positive FID was not economically possible. The project then entered a “slow-mode” in which activities focused on reducing the funding gap, either by reducing costs or by securing new funding. In late 2014 a possible new funding structure was identified, and explored in 2015 and 2016. This included additional grants for operation and cost reductions. The cost reduction that could be successfully applied was to change storage sink to Q16-Maas, operated by Oranje Nassau Energie (ONE). This smaller field was much closer, with only a 6 km pipeline required. This resulted in a remobilization of the project late in 2016, and development of the new scheme. However, in mid 2017 work was again halted, and formally stopped in November 2017.

### *Scope of this Report*

This brief report describes the governance and compliance structures for the two legal entities, Maasvlakte CCS Project CV and Maasvlakte CCS Project BV. The company responsible for delivering the ROAD Project was Maasvlakte CCS Project CV, with the BV acting as “general partner” under Dutch company law.

### *Report Summary*

This structure, with a BV and a CV, has been chosen to achieve limited recourse to the Parent Companies and to enable Parent Companies to set-off project losses against their profits to optimize tax-positions.

The legal entities are governed by:

- a. The Articles of Association
- b. The Limited Partner Agreement
- c. The Joint Venture Agreement
- d. The Management Board Project Regulations

The above set of documents comprise high level authorization, competence and decision-making rules between the partners/shareholders of the entities and their respective representatives (the Directors) in the Management Board of the joint venture entities.

The mandate of the Directors to represent the Joint Venture and to enter into financial obligations is subject to the prior approval of the Supervisory Board for all matters specifically mentioned in the JVA (“the reserved matters”)

In the early days of the project, there was a lot of uncertainty over whether there was a requirement to adhere to EC public procurement tendering procedures. It was decided to implement “best value for money”, an internal procedure for procurement and tendering. At a later stage it was confirmed by the EC that the EEPR grant does not need to be included in the threshold for contracts subsidized by more than 50% by contracting parties, and that therefore Article 8 of Directive 2004/18/EC is not applicable for the ROAD project. This meant that the project did not need to comply with EC regulations for public procurement.

A comprehensive Finance Manual is written describing the working methods, tools, procedures and the system of internal controls in respect of the finance functions (accounting, controlling and reporting) and associated processes (procurement, risk management) within the project. Partially through the Finance Manual, and partially through stand-alone procedures, the following specific subjects in respect of compliance have been dealt with:

- a. Treasury Statute
- b. Competition law and Information Policy / Code of Conduct
- c. Interfaces – Engineering Design Approval (Capture/MPP3)
- d. Procedure regarding the release of knowledge sharing deliverables to the GCCSI

## 2. Introduction

### 2.1 Introduction

The ROAD project was one of the leading European CCS Projects from 2010 to 2017. During that time, a great deal of project development and engineering work was completed, including full design and procurement to allow a possible FID at end 2011 or early 2012.

This report is one of a set of “Close-out” reports written after the formal decision to terminate the project was made in September 2017. The report aims to summarise the governance and compliance structures used for the joint venture companies responsible for the project. The objective is to give future CCS project developers, and knowledge institutes, the maximum opportunity to use the knowledge gained and lessons learnt by the ROAD project team. While the specific company structure used by ROAD is designed according to Dutch company and tax regulations, the issues addressed are generic.

This brief introduction to the “Close-out Report Governance and Compliance” gives a general description of the overall project, including the history of its development, so that the further report can be understood in context.

### 2.2 General Project Description

The ROAD Project is the Rotterdam Opslag and Afgang Demonstratieproject (Rotterdam Capture and Storage Demonstration Project) which ran from 2009 to 2017, and was one of the leading integrated Carbon Capture and Storage (CCS) demonstration projects in the world.

The main objective of ROAD was to demonstrate the technical and economic feasibility of a large-scale, integrated CCS chain deployed on power generation. Previously, CCS had primarily been applied in small-scale test facilities in the power industry. Large-scale demonstration projects were needed to show that CCS could be an efficient and effective CO<sub>2</sub> abatement technology. With the knowledge, experience and innovations gained by projects like ROAD, CCS could be deployed on a larger and broader scale: not only on power plants, but also within the energy intensive industries. CCS is one of the transition technologies expected to make a substantial contribution to achieving European and global climate objectives.

ROAD is a joint project initiated in 2009 by E.ON Benelux and Electrabel Nederland (now Uniper Benelux and Engie Nederland). Together they formed the joint venture Maasvlakte CCS Project C.V. which was the project developer. The ROAD Project is co-financed by the European Commission (EC) within the framework of the European Energy Programme for Recovery (EPR) and the Government of the Netherlands. The grants amount to € 180 million from the EC and € 150 million from the government of the Netherlands. In addition, the Global CCS Institute is knowledge sharing partner of ROAD and has given a financial support of € 4,3 million to the project. The Port of Rotterdam also agreed to support the project through investment in the CO<sub>2</sub> pipeline.

In the first phase of the project, 2009-2012, the project was developed to final investment decision (FID) based on using the P18-4 gas-field operated by TAQA as the CO<sub>2</sub> storage location. This required a pipeline of approximately 25km from the capture location (Uniper’s coal-fired Maasvlakte Power Plant – MPP3), about 5km onshore and 20km off-shore.

Unfortunately, the collapse in the carbon price undermined the original business case, and in 2012 a positive FID was not economically possible. The project then entered a “slow-mode” in which activities focused on reducing the funding gap, either by reducing costs or by securing new funding. In late 2014 a possible new funding structure was identified, and explored in 2015 and 2016. This included additional grants for operation and cost reductions. The cost reduction that could be successfully applied was to change storage sink to a newly developed field, Q16-Maas, operated by Oranje Nassau Energie (ONE). This smaller field was much closer, with only a 6 km pipeline required. This resulted in a remobilization of the project late in 2016, and development of the new scheme. However, in mid 2017 work was again halted, and the grant formally terminated in November 2017.

The ROAD project design applied post combustion technology to capture the CO<sub>2</sub> from the flue gases of a new 1,069 MWe coal-fired power plant (Maasvlakte Power Plant 3, “MPP3”) in the port and industrial area of Rotterdam.

The capture unit has a design capacity of 250 MWe equivalent. During the operational phase of the project, approximately 1.1 megatons of CO<sub>2</sub> per year would be capture and stored, with a full-load flow of 47kg/s (169 t/h) of CO<sub>2</sub>. For transport and storage two alternatives were developed as described above: storage in the P18-4 reservoir operated by TAQA; and storage in the Q16-Maas reservoir operated by Oranje-Nassau Energie.

After a competitive FEED process, Fluor was selected as the supplier for the capture technology in early 2011. The plant was fully engineered, and long lead items contracted for, ready for an FID in early 2012. All the necessary permitting was completed, with a permit for the capture plant being granted in 2012. Following the delay to the project, an updated design was developed with Fluor in 2017 incorporating lessons learnt from research and development in the intervening years, changes to the MPP3 site, and the impact of the changes to the transport and storage system. A revision to the permit was under development when the project was halted.

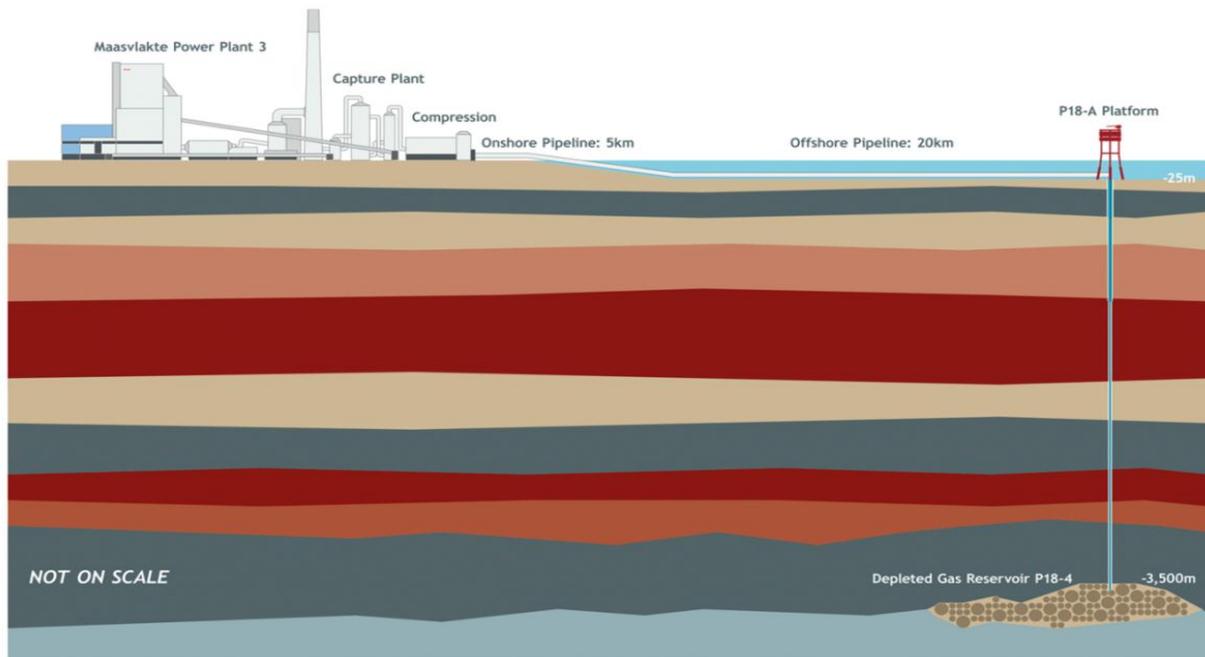
#### ***For storage in P18-4***

From the capture unit the CO<sub>2</sub> would be compressed and transported through a pipeline: 5 kilometers over land and about 20 kilometers across the seabed to the P18-A platform in the North Sea. The pipeline has a transport capacity of around 5 million tonnes per year. It is designed for a maximum pressure of 140 bar and a maximum temperature of 80 °C. The CO<sub>2</sub> would be injected from the platform P18-A into depleted gas reservoir P18-4. The estimated storage capacity of reservoir P18-4 is approximately 8 million tonnes. Figure 2.1 shows the schematic illustration of this.

P18-4 is part of the P18 block which also includes the larger P18-2 and also a small field, P18-6. These depleted gas reservoirs are about 3.5 km below the seabed under the North Sea about 20km from the Dutch coastline, and have a combined CO<sub>2</sub> storage capacity of around 35 Mt.

The ROAD Project with storage in P18-4 was fully developed for FID at the end of 2011, including all engineering, regulatory and permit requirements. A CO<sub>2</sub> storage permit was granted in 2013, the first such permit in Europe. Unfortunately, a positive FID was not possible due to funding problems, and in 2012 technical project development on P18-4 was halted.

Figure 2.1 Schematic overview of the ROAD Project using storage in P18-4



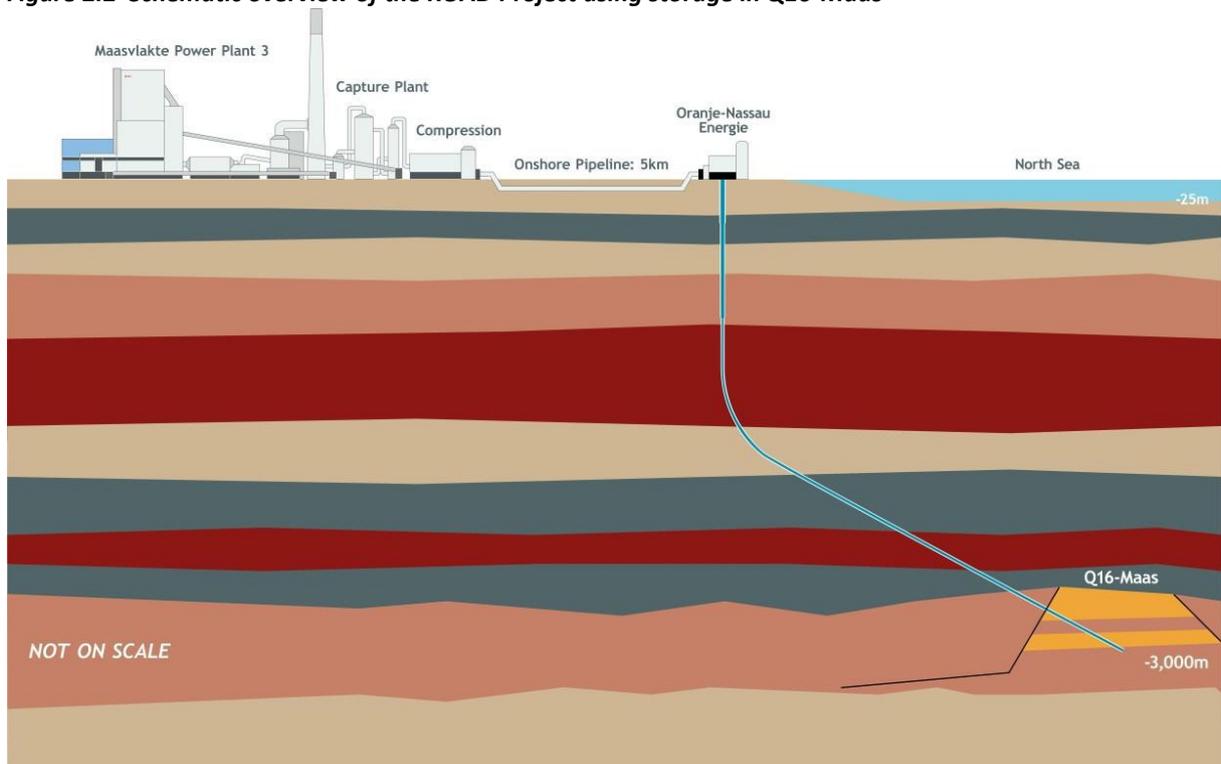
**For storage in Q16-Maas**

From the capture unit the CO<sub>2</sub> would be compressed and transported through a pipeline over land to the current ONE-production site Q16-Maas (Figure 2.2). The selected pipeline design would have a transport capacity in excess of 6Mt/year. It was designed for a maximum pressure of 40 bar although in the first phase operation at 20 bar was planned. Final compression to injection pressure (around 80 bar) would be at the injection site.

The Q16-Maas reservoir is located just off-shore from the Maasvlakte, and is reached by a long-reach well, drilled from on-shore. The well is about 5km long, and travels approximately 3km down to reach the reservoir depth, and 3 km horizontally (off-shore) to reach the reservoir location. The reservoir is relatively new (production started in 2014) and was not due to finish production until 2022. Therefore this scheme involved the drilling of a second well to accelerate gas production and so allow CO<sub>2</sub> injection to start in 2020. This second well would also allow co-production of modest amounts of condensate (and possibly natural gas) during CO<sub>2</sub> injection. The estimated storage capacity of reservoir Q16-Maas is between 2 and 4 million tonnes.

This reservoir was identified as a possible storage location only at the end of 2014, with project development running through 2015-2017. Due to funding uncertainties, the work focused on feasibility, cost estimation and concept design to the level required for permitting. Therefore a lower level of detail is available for this storage location, compared to P18-4. It should also be noted that unexpected water production was experienced from Q16-Maas in 2016, leading Oranje-Nassau Energie to issue a revised reservoir model and production plan in May 2017. Since this was only shortly before the ROAD work was halted, the ROAD plans for Q16-Maas were not fully amended to reflect this new production data.

Figure 2.2 Schematic overview of the ROAD Project using storage in Q16-Maas



### 3. Legal and Organisational Structure

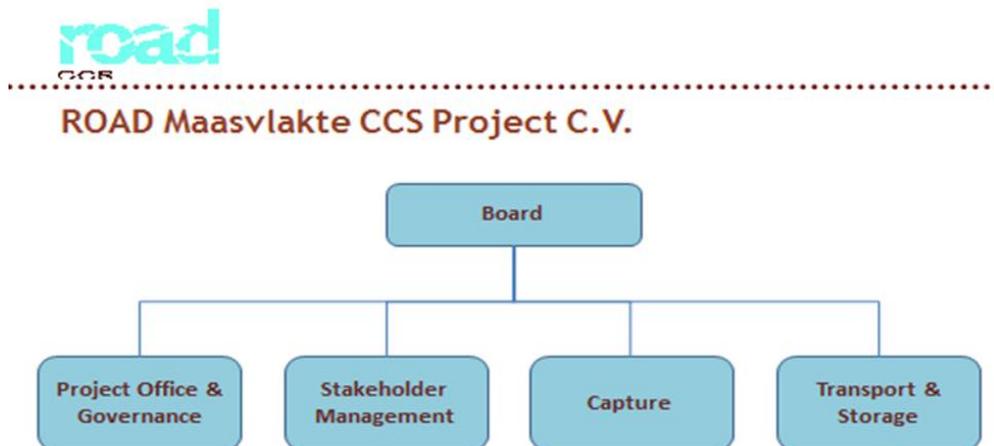
For the ROAD Project, two special purposes vehicles were founded, the legal entities Maasvlakte CCS Project CV and Maasvlakte CCS Project BV. The CV is the entity in which the project is actually executed (also the beneficiary of the grant agreements) whereas the BV acts as “general partner” of the CV with an interest of 0.02%. Each of the Parent Companies (E.ON/Uniper and GdF Suez/ENGIE) participate in the CV for 49.99%. The BV is fully owned by the Parent Companies with 50% of the shares each. This structure has been chosen to achieve limited recourse to the Parent Companies and to enable Parent Companies to set-off project losses against their profits to optimize tax-positions.

The legal entities are governed by:

- a. The Articles of Association
- b. The Limited Partner Agreement
- c. The Joint Venture Agreement
- d. The Management Board Project Regulations

The above set of documents comprise high level authorization, competence and decision-making rules between the partners/shareholders of the entities and their respective representatives (the Directors) in the Management Board of the joint venture entities. The project started with 4 full-time Directors (2 Directors A appointed by E.ON/Uniper Benelux and 2 Directors B appointed by GdF Suez/ENGIE Nederland).

The Management Board performs and is responsible for all acts of management and disposition with respect to the legal entities of ROAD in accordance with the provisions stipulated in the above mentioned documents. The members of the Management Board are also the dedicated Heads of the departments 1) Project Office & Governance, 2) Stakeholder Management, 3) Capture and 4) Transport & Storage of the ROAD organization. See below chart.



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At a later stage in the project, the Management Board was reduced to 3 members, representing 2FTE of which 1 FTE of each Parent Company.

### 4. Authorization Rules

The mandate of the Directors to represent the Joint Venture and to enter into financial obligations is subject to the prior approval of the Supervisory Board for all matters specifically mentioned in the JVA (“the reserved matters”), and include the prior approval for all financial obligations in excess of €0.5M and without the budget.

The following internal authorization rules have been set-up and adhered to:

- a. Without an appropriate mandate from the MB, other staff members from the ROAD-project organization were not allowed to legally represent the entities and/or enter into whatever kind of legal commitments on behalf of these entities.
- b. All time-records of staff employed within the ROAD-project organization requires approval by the Head (Director) of the relevant department.
- c. Each invoice requires approval of at least one of the Director’s, invoices from group companies requires approval by both a Director A and a Director B.
- d. All payments require authorization by 2 Directors, one of each category A and B.

## 5. Procurement and Tendering

In the early days of the project, there was uncertainty about the requirement to adhere to EC public tendering procedures (Article 8 of Directive 2004/18/EC). It was decided that such a requirement would delay the project in such way that it would not be feasible to proceed with the project.

In order to prove “best value for money”, an internal procedure for procurement and tendering has been prepared and implemented.

The procedure required that a written consideration for the choice of the relevant supplier is provided for all transactions over €5k. For all transactions over €60k, a decision matrix based upon bids from at least 3 suppliers is also required.

An internal work-flow was agreed and laid-down to ensure that the Management Board only approved orders/contracts when accompanied by the relevant documents, and that prior approval was given by the business controller (to check on budget compliance) and the internal legal counsel.

Auditors agreed upon the procedure for both “being in control” and “eligibility of costs” under the grant agreements.

At a later stage, it was confirmed by the EC and included in the 4<sup>th</sup> amendment of the grant agreement that the EEPR grant does not need to be included in the threshold for contracts subsidized by more than 50%, and that therefore Article 8 of Directive 2004/18/EC (public procurement) is not applicable for the ROAD project.

## 6. Finance Manual

A comprehensive manual is written describing the working methods, tools, procedures and the system of internal controls in respect of the finance functions (accounting, controlling and reporting) and associated processes (procurement, risk management) within the project. A first version of the manual has been approved by the Management Board in October 2011. Most of the procedures were already adhered to before that date. Updates have been delayed up till FID and therefore were never formally implemented.

## 7. Other Procedures

Partially through the Finance Manual, and partially through stand-alone procedures, the following additional specific subjects in respect of compliance were dealt with:

- a. Treasury Statute
- b. Competition law and Information Policy / Code of Conduct
- c. Interfaces – Engineering Design Approval (Capture/MPP3)
- d. Procedure regarding the release of knowledge sharing deliverables to the GCCSI