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In the published version of this decision, some information has been omitted, pursuant to articles 24 and 25 of Council Regulation (EC) No 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 93 of the EC Treaty, concerning non-disclosure of information covered by professional secrecy. The omissions are shown thus [...].

PUBLIC VERSION

WORKING LANGUAGE

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Subject: State aid case: N 381/2010 – The Netherlands
Aid for a CCS project in the Rotterdam harbour area

Dear Sir,

1. PROCEDURE

1. Following pre-notification contacts, on 3 September 2010 the Dutch authorities notified the abovementioned measure which aims at promoting the construction of CO₂ capture, transport and storage facilities in the Rotterdam area. Following a request for additional information of 29 September 2010, the Dutch authorities provided a response on 1 October 2010.

2. DESCRIPTION

2. The Dutch authorities intend to grant an aid of EUR 150 million to Maasvlakte CCS Project C.V. ("Maasvlakte C.V.") to support the construction of CO₂ capture, transport and storage facilities ("the CCS project") in the Rotterdam port area. The project should be operational as of 2015, if a positive final investment decision is taken. A final investment decision is foreseen for November 2010. The project has also been selected

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for funding of the European Union (EU) from the European Energy Programme for Recovery (hereinafter: "EEPR")¹.

3. As part of the CCS project, a 250 MW equivalent CO₂ capture plant will be built and connected to the coal fired power plant Maasvlakte Power Plant 3 ("MPP3"). The MPP3, which is not part of the notification, is currently being constructed by E.ON and will have a capacity of 1070 MW. The envisaged capture rate of the CO₂ capture plant is at least 90%. This would provide for a capacity of capturing 1.1 million ton CO₂ annually which corresponds to about 20% of the total CO₂ output of the MPP3.
4. For transporting the CO₂ from the capture plant to the storage location a pipeline with a 16 inch diameter will be constructed over a distance of 25 kilometres. GDF Suez E&P Nederland B.V. will be subcontracted for the design and construction of the pipeline and will be in charge of the operation and maintenance of the pipeline.
5. According to the Dutch authorities, as initial transportation of CO₂ in gaseous phase is foreseen, a 16 inch pipeline is the most cost effective solution. However, later, CO₂ will be transported in dense phase² which will result in potential throughput of 5 million ton of CO₂ annually. The Dutch authorities confirmed that access to the excess capacity, on top of what is needed for the CCS project (i.e. 1.1 million ton CO₂ annually), will be available on transparent and non-discriminatory terms. At the same time, the Dutch authorities submit that projects of potentially interested third parties are still in development phase and it is currently not reasonably certain that these projects will be realised.
6. The transported CO₂ will be stored in a depleted gas field in the North Sea, the so called P18 block. The total capacity of the storage location is theoretically 40 million tons of CO₂. However, for safety reasons the maximum storage capacity will be around 30 million tons of CO₂. The estimated need for the CCS demo project is 22 million tons of CO₂, corresponding to 20 years of 1.1 million tons of CO₂ captured. TAQA Offshore B.V. will undertake to store the CO₂. The Dutch authorities confirmed that access to the excess storage capacity would be available on transparent and non-discriminatory terms. However, it is currently also not reasonably certain that third parties will request such access.

a. The technology involved

7. CCS is a process where CO₂ emissions from large point sources such as fossil fuel power plants are captured, transported and stored in geological formations underground. Storage of CO₂ reduces the amount of CO₂ in the atmosphere, and is thereby considered to be a key (bridge) technology to combat climate change.

¹ The EEPR is a financial instrument whose overall objective is to stimulate recovery from the downturn affecting the EU economy while bringing the EU closer to meeting its energy and climate policy objectives, namely the security and diversification of energy supply, the operation of the internal energy market and the reduction of greenhouse gas emissions. More information is available on the website: http://ec.europa.eu/energy/eepr/index_en.htm

² CO₂ in dense phase can mean both liquid CO₂ and supercritical CO₂. Injecting CO₂ in dense phase will increase the capacity of the pipeline compared to injecting CO₂ in gaseous phase.

8. The technology chosen to separate and capture CO₂ by the project developers is the 'post combustion capture'³. The Dutch authorities submit⁴ that the most developed post combustion processes rely on chemical scrubbing using alkaline solvents with high capture capacity for the CO₂. The post combustion processes usually work with an aqueous solvent solution that undergoes a cyclic absorption/desorption process. The CO₂ from the flue gas is absorbed by the solvent in a so-called absorber column and subsequently desorbed from the loaded solvent in a stripper column, generating a highly concentrated CO₂ flow.

b. Environmental benefits

Objective of Common interest

9. The Dutch authorities submit that the environmental benefit of the CCS project consists of the fact that (yearly) an amount of 1.1 million tons of CO₂ will not be emitted into the atmosphere.
10. In a broader sense, the Dutch authorities refer to technology development also in view of knowledge sharing activities as an environmental benefit. Consequently, according to the Dutch authorities, the environmental benefit lies in future reductions of CO₂ resulting from experience generated by the project. In addition, the Dutch authorities submit that the CCS project will therefore address an objective of common interest, i.e. the protection of the environment by reducing CO₂ emissions.
11. The Dutch authorities also put forward that the Commission accepted that CCS technology has to play a key role in order to achieve this objective of common interest and that there is a need for large scale CCS demonstration projects⁵. Finally, the Dutch authorities refer to point 69 of the Environmental Aid Guidelines ("EAG")⁶ which indicates a general positive attitude towards State aid for CCS projects by the Commission.
12. According to the Dutch authorities, a pre-condition for companies to invest in CCS would be a CO₂ price of at least around 70 €/ton. Therefore, because no EU regulation that would make CCS mandatory for fossil fuelled power plants is expected soon, investment aid is required to develop large-scale CCS projects at least in the short run.

Counterfactual scenario

13. The Dutch authorities submit that in absence of aid, the joint venture partners would proceed with their current CCS small scale pilot projects, but not undertake a (joint) large-scale CCS demonstration project, at least not before 2020. The assumed costs of small-scale pilot projects would be as high in the environmental (aid) scenario as in the counterfactual scenario and not be affected by the notified large-scale CCS project.

³ Other technologies are pre combustion capture and oxyfuel combustion.

⁴ See section 1.2 of the EEPR proposal

⁵ It is referred to the 2006 Commission Energy Green Paper, the 2007 Commission Communication on Sustainable Power Generation from Fossil Fuels, the 2008 Commission Communication on Supporting Early Demonstration of Sustainable Power Generation from Fossil Fuels, the ETS and CCS Directives and the EEPR Regulation.

⁶ Community Guidelines on State Aid for Environmental Protection, OJ 01.04.2008, C82, page 1,

14. This is due to the fact that small scale pilot projects serve another purpose than the notified large-scale CCS (demonstration) project. Generally speaking, in small scale pilot projects for capture technology, technology suppliers apply their newest, most promising technology on a scale larger than can be realized in the lab and on flue gases from operating coal-fired power plants. These pilots are designed such that many process parameters can be varied and optimal configurations can be determined. In general, pilot projects do not consist of the full CCS chain, but only of one of the steps of this chain.
15. On the other hand, the notified large scale demonstration project aims at gaining experience with developing and operating an integrated CCS chain on industrial scale, using a technology for which (small-scale) industrial experience exists⁷. The Dutch authorities submitted internal evidence from the joint venture partners⁸ supporting the view that the demonstration of the full CCS chain on an industrial scale is not expected before 2020⁹.

c. Beneficiary, national legal basis, duration and budget

Beneficiary

16. The direct beneficiary of the aid is Maasvlakte CCS Project C.V. ("Maasvlakte C.V."). Maasvlakte C.V. is a joint venture between E.ON Project B.V. which is part of the E.ON Group and Electrabel Nederland Project B.V. which is part of GDF Suez Group. The E.ON Group ("E.ON") and GDF Suez Group ("GDF Suez") are referred to as the joint venture partners and can be considered as the final beneficiaries.

National legal basis

17. The support will be granted on the basis of Article 2 of the Framework Law Subsidies of the Ministry of Economic Affairs (Kaderwet EZ subsidies). The Framework Law provides for the possibility to provide ad hoc aid. The selection criteria were set out in a letter to the Dutch Parliament in June 2009. These criteria already took account of the fact that three projects were short listed for potential EU support from the EEPR.

Budget

18. The support of EUR 150 million will be provided in the form of a direct grant. Initially, the beneficiary Maasvlakte C.V. requested support of EUR 190 million from the Dutch authorities¹⁰. However, the Dutch authorities considered this amount to be too high and accepted only a reduced amount of aid. The Dutch authorities submitted that the aid will be granted in the period 2010-2019 and is subject to approval by the Commission.
19. The EUR 150 million support will be granted into two stages. For the construction of the capture, transport and storage facilities EUR 75 million will be granted on the

⁷ Although the Dutch authorities acknowledge that experience with the notified CCS project may lead to adjustments to R&D strategies, since the small scale pilot projects and the large scale CCS project have different purposes and characters, there is according to the Dutch authorities no reason to assume that either more, less or different pilot projects will be performed in counterfactual scenario.

⁸ The Dutch authorities submitted minutes of meetings, internal presentations, internal correspondence and calculations from both joint venture partners.

⁹ See also EEPR proposal, page 7.

¹⁰ By letter dated 8 September 2009.

condition that the total amount of public support, including funding from EEPR, does not exceed the total eligible costs. For the demonstration phase, EUR 18.75 per ton CO₂ stored will be granted. The maximum aid amount for the demonstration phase is set at EUR 75 million which corresponds to the storage of 4 million tons of CO₂.

20. As regards the EEPR¹¹ funding, the Dutch authorities confirmed that the notified CCS project was selected for EUR 180 million EU funding from the EEPR. The EEPR sets out how to provide stimulus to the European economy targeting the EU long-term objectives. As part of the recovery programme, EU funding was made available i.a. for investments in CCS projects.
21. The proposals for EEPR support are selected by the Commission, assisted solely by Council and Parliament Committees, on the award and eligibility criteria laid down in the Regulation. The EEPR Regulation is an entirely EU instrument and the role of Member States is confined to making every effort to implement the projects selected by the Commission and undertaking technical and financial control of the execution thereof. Apart from the notified project, under this programme another four CCS projects were selected for EUR 180 million funding (each) and one for EUR 100 million¹².
22. Additionally, EU funding for CCS projects will become available at EU level as part of a new support scheme financed from the Emission Trading System New Entrants Reserve ("NER300")¹³. Theoretically, the notified project belongs to the types of projects that may be submitted for application of such NER-funding in 2011 with the selection process envisaged to be finalised by the end of 2012.
23. However, the Dutch authorities submitted that under the present circumstances, with funding from both EEPR and the Dutch authorities for the CCS project, there is no intention by the joint venture partners or the Dutch authorities to apply the notified CCS project for NER300 funding.

d. Eligible costs and profitability calculations

24. The two cost calculations¹⁴ submitted by the Dutch authorities are presented below. First, the Dutch authorities submitted a calculation of the extra investment costs for environmental protection net of extra operating costs and benefits over the first five years of the CCS project, in nominal terms. Second, the Dutch authorities submitted a

¹¹ When it is referred to details set out in the EEPR, see Regulation (EC) No 663/2009 of the European Parliament and of the council of 13 July 2009 establishing a programme to aid economic recovery by granting Community financial assistance to projects in the field of energy

¹² The other selected projects are: Belchatow (PL), Compostilla (SP), Hartfield (UK), Jaenschealde (DE), Porto Tolle (IT), <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/1896&format=HTML&aged=0&language=en&guiLanguage=en>.

¹³ Directive 2003/87/EC as amended by Directive 2009/29/EC amends the greenhouse gas emission trading scheme of the Community, reserves up to 300 million allowances (EUAs) from the new entrants' reserve (NER 300). For this scheme 300 million allowances (representing EUR 4.5 billion at the current 15 EUR/ton CO₂ allowance price) from the New Entrants Reserve will be monetized to finance CCS and renewable demonstration projects based on a selection performed by the Commission. The selection process is due to be launched in October 2010.

¹⁴ Similar to chapter 3 and 5 of the EAG.

* 'business secret'

calculation of the profitability of the notified project over the lifetime of the investment, both with and without the envisaged aid from the Dutch authorities.

Eligible costs

25. The table below provides a calculation of the eligible costs provided by the Dutch authorities. The calculation is based on an electricity price of EUR 55/ MWh which is credible according to the beneficiary for a post crisis scenario. This results in the following aid intensity calculation:

Table 1: Net Eligible costs and aid intensity, CCS project

	Environmental scenario (large-scale CCS project, pilot projects)	Counterfactual scenario (pilot projects only)
Investment costs (capital expenditure)	[...]*	[...]
Operating costs over the first five years	[...]	[...]
Operating benefits over the first five years ¹⁵	[...]	[...]
Eligible costs	[...]	
Aid amount (from Dutch authorities)	150	
EEPR Funding	180	
Aid intensity	[...]	

Source: Dutch authorities.

26. The cost estimate for the capture plant is based on, following a tender procedure, global FEED-studies for full scale capture plants which costs were downscaled for the purpose of the project to a 250 MW equivalent capture plant¹⁶. The capture unit is the main investment cost element in the CCS chain. For transport and storage costs are based on indicative offers from the intended subcontractors GDF SUEZ E&P (transport) and TAQA (storage). GDF Suez E&P Nederland B.V. will charge the beneficiary on a cost basis and tender out most of the work according to standard industry practice.
27. The Dutch authorities submit that the total investment costs amount to EUR [...] and correspond to the total additional investment costs (see paragraph 13). When taking into account the operational profits and costs for the first five years, the eligible cost amount to EUR [...]. Finally, the proposed aid amount of EUR 150 million would result in an aid intensity of [...].

Profitability calculations

28. The Dutch authorities submitted Net Present Value (NPV) calculations discounting the costs and benefits over the life time of the project, on the basis of a [...] discount rate and a 20 year (operational) life time. The NPV calculations include the EUR 180 million EEPR funding and savings on ETS allowance purchases due to the notified project. In support of the [...] discount rate, the Dutch authorities submitted internal documents from the joint venture partners. NPV calculations have been carried for a pre-crisis and a

¹⁵ Operating benefits do not include CO₂ savings similar to the definition in point point 70(20) of the EAG (see also Commission decision in case N450/2009).

¹⁶ A tendering process for the capture plant started and in April 2010 two FEED studies started, performed by the highest qualified suppliers with the most mature technology, best FEED proposals and lowest estimated EPC costs.

post-crisis scenario. The scenarios are based on actual combinations of electricity price and CO₂ price modeled from the market (see table 2).

29. The two main parameters in the NPV calculation are the prices for electricity and CO₂ on the one hand (pre- and post-crisis scenario) and aid from the Dutch authorities on the other hand. For the CCS chain, the beneficiaries have assumed a technical and economic lifetime of the CCS chain of 20 years, annual operating costs of EUR [...] (indexed from 2009) and an output loss of [...] (costs depend on electricity price) due to the energy consumption incurred by the CCS chain. These assumptions follow from the EEPR proposal.
30. The resulting Net Present Values of the project, all negative, are presented in the table below:

Table 2: Net present values (x mln EUR), CCS project, 2010-35, [...] discount rate

	Pre-crisis (electricity: €85/MWh, CO ₂ : €30/ton, inflated over time)	Post-crisis (electricity: €55/MWh, CO ₂ : €15/ton, inflated over time)
Net Present Value without the €150m aid from Dutch authorities	[...]	[...]
Net Present Value with the €150m aid from Dutch authorities	[...]	[...]

Source: Dutch authorities

31. The NPV is in all four scenario's negative which indicates a negative business case (loss) for the beneficiary.

Strategic interest

32. According to the Dutch authorities, the reason for the joint venture partners in the Maasvlakte C.V. to accept a negative business case, whereas for other investments a positive business case would be required, is that first there is a strategic interest to be leading energy companies also in bringing forward relevant technology and secondly the initiative contributes to the general acceptance of coal fired power plants still being built. However, the Dutch authorities submitted that such strategic rationales can not be quantified.
33. In addition to support public acceptance of coal fired plants, the Dutch authorities submitted that the joint venture partners have an interest to be on the forefront of technological developments. Even if first mover advantages concerning CCS are limited, experience in operating a full CCS chain is considered an advantage and may provide for the possibility to achieve marginal cost reductions faster. Although not foreseen yet, CCS may in the future be applied in other new build coal fired power plants either due to economical feasibility or mandatory application.
34. The Dutch authorities submitted internal documents from the joint venture partners which support the strategic interest in accepting the CCS project despite a negative business case even when both EEPR funding and funding from the Dutch authorities is

taken into account. In addition, the Dutch authorities submitted information¹⁷ showing that a negative business case may under certain conditions indeed be acceptable.

e. Impact of the measure on the competitive position of the beneficiary

Impact on competitive situation

35. The Dutch authorities as a starting point consider it unlikely that the aid measure leads to a serious distortion on the relevant markets. According to the Netherlands, the CCS market is still at the stage of research and development and the beneficiary (and joint venture partners) would not obtain any technology licenses from the large-scale CCS project. The technology remains with the suppliers of the equipment and not with the power generators. Furthermore, the joint venture partners will share their knowledge gained on the project.
36. As regards the electricity markets, again the Dutch authorities submit that no negative impact is expected, because the CCS project has a negative NPV and CCS will not create a new product. Any other advantages, such as future mandatory application of CCS, do not prevent third parties from entering or staying in the market.
37. The Dutch authorities consider as the relevant markets¹⁸ (1) the market for electricity generation and wholesale supply¹⁹, (2) the Dutch market for electricity retail supply to small customers, (3) the Dutch market for electricity retail supply to large customers. The market shares are as follows:

Table 3 Market shares of different players in three electricity markets

	Market for electricity generation and wholesale supply	Market for electricity retail supply to small customers	Market for electricity retail supply to large customers
Company	Market Share	Market Share	Market Share
RWE/Essent	25-35%	25-35%	15-25%
Nuon	10-20%	20-30%	10-20%
GDF Suez	10-20%		20-30%
E.ON	5-10%		5-10%
Rijnmond	5-10%		
Delta	5-10%	5-10%	0-5%
Eneco		20-30%	10-20%
Oxxio		5-10%	
Greenchoice		0-5%	
Trianel			5-10%
Others			10-20%

¹⁷ The information consisted mainly of minutes and internal presentations.

¹⁸ In line with and data from RWE/Essent merger case (M.5467, 23.06.2009).

¹⁹ This market includes electricity generated and imported through interconnectors, as well as electricity bought and sold both through energy exchanges, including day-ahead, intra-day and spot market platforms and through bilateral contracts.

Source: Dutch authorities

38. According to the Dutch authorities, taking as a benchmark a 25% market share or an HHI of 2000, the figures show that even in worst case scenarios the figures would only be just above the thresholds. The Dutch authorities consider this as an indication that the aid measure does not cause any major concerns.

Knowledge Sharing

39. The Dutch authorities have identified four main vehicles through which the knowledge and information acquired through the CCS project will be shared. Firstly, the beneficiary is a member of the European CCS Demonstration project Network. Membership of this Network is linked to the funding received under the EEP. The knowledge which will be shared is set out in a Knowledge Sharing Protocol²⁰.
40. The members of the Network, as set out in the Knowledge Sharing Protocol, committed to share information to the greatest extent possible concerning: (a) new knowledge generated in the areas of technical set up and performance, cost levels, environmental impact and health and safety; (b) identification of good practices, lessons learned and recommendations for implementing large-scale CCS projects and (c) contributions to the development of CO₂ composition and transport standards and infrastructure strategies.
41. Secondly, the joint venture partners are members of the European Technology Platform for zero emissions fossil fuel power plants (ZEP). ZEP was created in 2005 and brings together different stakeholders to guide the development and deployment of CCS technologies, through, in particular information and knowledge dissemination.
42. Thirdly, the joint venture partners, as well as GDF Suez E&P and TAQA Offshore B.V. are partners in the national Research and Development program CATO-2²¹ which focuses on facilitating and enabling integrated development. Finally, the Dutch authorities put forward that in the permitting process a lot of information becomes available for third parties which may provide competitors with very relevant information to help them developing CCS projects on their own plants.
43. The Dutch authorities claim that successful demonstration of the CCS technology on an industrial scale through the CCS project may in itself be the most important and substantial contribution to all the competitors. The CCS project foresees a separate work package on dissemination and knowledge sharing.
44. The beneficiary is also obliged as a requirement set by the Dutch government to disseminate and share the knowledge gained by the CCS project. The beneficiary has to report at least annually to the Dutch government about the state of play of the project and about the knowledge sharing activities.

²⁰ The knowledge sharing protocol can be found on the website of the CCS Demonstration Network: <http://www.ccsnetwork.eu/documents/European%20CCS%20Project%20Network%20Knowledge%20Sharing%20Protocol%20final%2020100531.pdf>

²¹ The core of the CATO-2 programme (about 70% of the R&D efforts) exists of 13 sites that each offer opportunities for applied research on CCS. Combined they cover the entire CCS chain. For more information: www.co2-cato.nl

45. Finally, the Dutch authorities confirm that the beneficiary (and the joint venture partners) does not expect acquiring any new Intellectual Property Rights. The technology is provided by the equipment manufacturers and the Dutch authorities confirmed that the beneficiary would not request exclusivity from the equipment providers constructing the CCS chain.

3. ASSESSMENT

a. Existence of State aid

46. A measure constitutes State aid under Article 107(1) of the TFEU if it fulfils four conditions. Firstly, the funding comes from the state or state resources. Secondly, the measure confers an advantage to certain undertakings or economic activities. Thirdly, the measure is selective. And fourthly, the measure affects trade between Member States and distorts competition in the internal market.
47. The aid from the Dutch authorities to the beneficiary fulfils all the conditions mentioned above. The aid is funded by the budget of the Netherlands and the aid confers an advantage to the beneficiary by providing funds which he would not have obtained under normal market conditions. The aid is selective since it is only granted to the beneficiary. It has the potential to affect trade between Member States and to distort competition because the beneficiary, or at least through its joint venture partners, is active in a sector where trade between Member States takes place. The aid granted to the beneficiary thus constitutes State aid pursuant to Article 107(1) of the TFEU.
48. As mentioned in paragraph 46, possible State aid under Article 107(1) of the TFEU must involve actions imputable to a Member State through State resources. As regards the funding from the EEPR, these are EU resources paid from the EU budget to the beneficiary. Further, the Member States have a limited role restricted to support the correct technical and financial implementation of the projects selected by the EU legislator. The EU funds are awarded and disbursed according to the sole procedures and criteria laid down in the EEPR Regulation. It follows that EEPR funding alone of this project does not constitute State aid in line with Article 107(1) of the TFEU. Nevertheless, such EU funding needs to be taken into account for the assessment of the compatibility of any related State aid.

b. Lawfulness of the aid

49. The Dutch authorities also confirmed to the Commission that the payment of the aid is subject to the approval by the European Commission. By notifying the measure before its implementation, the Dutch authorities have fulfilled their obligation according to Article 108(3) TFEU. Any advance payment will only be made after the authorisation of the notified measure by the Commission. Therefore the Commission considers that the Dutch authorities have fulfilled their obligation by notifying the aid measure before its implementation, in line with Article 108(3) of the TFEU.

c. Compatibility of aid

50. According to point 69 of the EAG, CCS projects are excluded from the scope of the EAG. However, given the strategic importance of CCS technology for the EU, the Commission will have '*a generally positive attitude towards State aid for such projects*'.

However, *'in view of the lack of experience it is too early to lay down guidelines relating to the authorisation of any such aid'*. The present case should therefore be assessed directly under Article 107(3)(c) TFEU, in line with point 69 of the EAG.

51. In the assessment on the basis of Article 107(3)(c) TFEU, the Commission will use, where appropriate, similar criteria as established in section 5.2 of the EAG for the detailed economic assessment, balancing the positive and negative effects of the notified aid. As for the positive effects, the aid must address a clearly identified market failure, be an appropriate instrument, have an incentive effect and be proportionate. As for the negative effects, the impact of the aid on competition and trade must be limited.

i. Positive effects of the aid

Common objective and market failure

52. Similarly to point 167 of the EAG, the Commission assesses whether State aid is targeted at a market failure by having a substantial impact on environmental protection.
53. As put forward by the Dutch authorities (see paragraph 12, 13), market players have not yet reached the industrial scale for CCS projects due to technical and commercial uncertainties. The economic incentives (notably the CO₂ price forecasts) are not currently sufficient to justify large-scale investments in CCS. It is recalled that according to the Dutch authorities a CO₂ price of 70 €/ton is required before companies invest in CCS.
54. In absence of State aid, the (joint venture partners of the) beneficiary would not have started a large-scale CCS demonstration project, at least not before 2020. The environmental benefit of the aid measure would thus be the acceleration of the demonstration of large-scale CCS before 2020. The aid would help to achieve lower abatement costs through CCS technology and incentivize other companies in the industry to adopt CCS technology faster.
55. The importance of CCS as a (bridge) technology has been recognized at EU level as it is part of the EU 2020 environmental objectives and was integrated in the energy and climate package agreed in December 2008 by the EU, since CCS projects are likely to reduce substantially CO₂ emissions by curbing emissions related to energy production from fossil fuels.
56. This is also reflected in the Environmental Aid Guidelines (EAG) which explicitly state a general positive attitude from the Commission towards CCS projects. EU funding for CCS projects was also made available as part of the EEPR. The notified CCS project was selected for such funding.
57. It can therefore be concluded that there is a market failure justifying State aid to improve environmental protection through CCS projects, in particular to accelerate the demonstration of large-scale CCS. Only with the aid, the beneficiary would start developing a large scale CCS project, including all steps, before 2020.

Appropriate instrument

58. The Commission has further assessed under similar criteria as included in points 169 and 170 of the EAG, whether State aid is an appropriate instrument to achieve the objective of environmental protection, given that other less distortive instruments may achieve the same results.
59. The EU has introduced ETS, a market-based instrument to incentivise CO₂ emission reductions. However, the CO₂ price alone is currently insufficient to make CCS economically viable at its initial stage of development and it is likely to remain so in the near future. On the other hand, the speedy development of the CCS technology, in particular to reach commercial scale by 2020 and to contribute to combating climate change, requires additional support.

60. At present, CCS investment costs are very high and neither the Dutch authorities nor the EU envisages currently making CCS mandatory for fossil fuelled power plants. Instead EU funding for CCS project is made available.
61. Taking the above into consideration, it can be concluded that the State aid constitutes an appropriate instrument.

Incentive effect and necessity of aid

62. On the basis of the information submitted, the beneficiary applied to the Dutch authorities before the start-up of the project. Therefore, the aid may provide an incentive for a more environmentally friendly behaviour, if all other conditions as mentioned below are met.
63. Applying similar conditions as set out in 5.2.1.3 of the EAG, State aid must always have an incentive effect, when it is provided for environmental purposes: it must result in the recipient changing its behaviour to increase the level of environmental protection. Also, the Member State must prove that without the aid, in the counterfactual situation, the more environmental friendly alternative would not have been retained and provide information demonstrating that the counterfactual situation is credible.
64. The Dutch authorities submitted that in absence of the aid and despite the EEPR grant, the (joint venture partners of the) beneficiary would not undertake a large-scale CCS project before 2020. Currently the economic and regulatory incentives are not such that high investments in CCS projects are likely. In addition, the Dutch authorities have provided internal evidence from the joint venture partners, showing that this counterfactual scenario is credible.
65. The Dutch authorities stated that the costs related to pilot projects are not affected by the large-scale demonstration project, as pilot projects serve to allow for improving different steps of the CCS chain (see paragraph 13 - 15). The Commission can accept the reasoning put forward in this particular case and for that reason the costs related to executing pilot scale projects in the aid and counterfactual scenario are identical, which renders the costs related to pilot scale projects irrelevant for the economic comparison between the two scenarios.
66. As regards the expected environmental effect linked to the change in the behaviour, the CCS project would result in an increase in the level of environmental protection as the measure accelerates the development and deployment of large scale CCS technology.
67. Further, the CCS project will reduce CO₂ emissions of the beneficiary and hence the number of EU ETS allowances the beneficiary has to buy, which will provide the beneficiary with a direct production advantage. However, this effect will be outweighed by the efficiency losses in power generation due to the capture process. Overall, the negative NPV of the project represents a burden for electricity generation of the beneficiary.
68. In addition, there are currently no negotiations at EU level to introduce CCS mandatory for fossil fuelled power plants and the development of large scale CCS projects does not seem to correspond to normal market practice since at this stage, there is no indication that competitors would undertake equivalent projects without public support. Therefore,

the incentive effect does not seem to be negatively impacted by market conditions or future mandatory standards. Although the technology used is generally proven in other industries, it has been tested in power generation only at small scale and the projects still bear risks in this respect.

69. Finally, a low profitability indicates the presence of an incentive effect of the aid. The beneficiary belongs to the electricity sector, where full auctioning of EU ETS allowances will take place as from 2013. Therefore the investment concerned will reduce the need of the beneficiary to purchase EU ETS allowances. The beneficiary will be incentivised in investing in the notified project if the price of EU ETS allowances over the lifetime of the project will guarantee positive returns given the costs of the CCS technology. The CO₂ price assumption is accordingly a significant criterion of the project profitability, and therefore of the incentive effect. In the view of the lack of persistent spot market data regarding CO₂ price after 2013, the assumption of 30 EUR/tCO₂ (inflated over time), retained as the 'pre-crisis' assumption by the Dutch authorities, is deemed to be most consistent with the analyzed options that were put in place in the view of the EU ETS Directive and most resembles the actual legislation that has been adopted²². Similarly, the assumption of 15 EUR/tCO₂ (inflated over time), submitted as the 'post-crisis' assumption by the Dutch authorities, can be viewed as consistent with the recent Commission Communication on the options to move beyond 20% greenhouse gas emission reductions²³.
70. On the abovementioned CO₂ assumptions combined by the Dutch authorities with corresponding electricity prices that would reflect historic market combinations, the NPV calculation - carried out to ensure that the aid amount does not exceed the expected lack of profitability over the lifetime of the project - shows that the NPV is negative in all cases (see paragraph 30).
71. A negative NPV implies that the project does not meet the profitability standards set by the beneficiary. However, as put forward by the Dutch authorities, the beneficiary may for strategic reasons accept a negative business case. The internal information submitted by the Dutch authorities indeed confirmed the strategic interest of the (joint venture partners of the) beneficiary. Furthermore, the Commission found that the information submitted demonstrated that a positive investment decision is possible on the basis of a negative business case. However, internal evidence provided by the beneficiary

²² Source: European Commission, Impact Assessment accompanying the package of implementation measures for the EU's objectives on climate change and renewable energy for 2020, 23.1.2008. An EU ETS allowance price of 30 EUR/tCO₂ for the period as from 2013 was assumed in a cost efficient reference scenario with a 20% greenhouse gas reduction objective as compared to 1990, with redistribution of non-ETS targets and with the impact of JI CDM credits. Further options included a cost-efficient reference scenario resulting in a 39 EUR/tCO₂ allowance price, redistribution of non ETS targets, no CDM credits scenario resulting in a 43 EUR/tCO₂ allowance price and redistribution of the non ETS targets, no CDM + redistribution of the renewables targets scenario no RES trade resulting in a 47 EUR/tCO₂ allowance price. The purpose of the modelling was not to estimate the carbon price, but the impacts from different policy options. For more details see http://ec.europa.eu/energy/climate_actions/doc/2008_res_ia_en.pdf.

²³ Source: European Commission, Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage, 26.5.2010. The 2020 price for CO₂ allowances is assessed to be 16.5 EUR/tCO₂ in case of full implementation of the climate change package and with a 20% emission reduction objective in 2020. As in the previous case, the purpose of the modelling was not to estimate the carbon price, but the impacts from different policy options. For more details see http://ec.europa.eu/environment/climat/pdf/26-05-2010working_doc2.pdf (p. 33).

demonstrated that the strategic interest alone would not have triggered the CCS project without the aid.

72. In this respect the Commission also observes that the Dutch authorities submitted that the joint venture partners will only take a final investment decision after a Commission decision is taken. This supports the incentive effect of the measure.
73. On balance, the Commission can accept the argument of the Dutch authorities that without the aid Maasvlakte C.V. would not invest in a large-scale CCS project, at least not before 2020.

Proportionality of aid

74. In order to declare the aid proportional, the Commission conducts the analysis in two steps similar to chapter 3 and 5 of the EAG to assess whether the eligible costs are limited to the extra costs necessary, the aid amount is kept to the minimum and the selection process non-discriminatory, transparent and open.
75. As regards the first step, the calculation²⁴ submitted by the Dutch authorities and presented in paragraph 25 results in an aid intensity of [...], which suggest that there is no overcompensation. Also there is a strategic interest for the joint venture partners. However, internal information showed that without aid and in spite of the strategic interest the beneficiary would not have undertaken the investment in CCS.
76. As regards the second step, firstly the Member State must provide evidence that the eligible costs are indeed limited to the extra costs necessary to achieve the level of environmental protection. The Commission considers that on the basis of the information provided by the Dutch authorities the calculation seems accurate, in particular in view of the limited experience related to large scale CCS projects and the fact that the main contractors will be selected on a competitive basis according to standard industry practices.
77. Secondly, the selection process should be conducted in a non-discriminatory, transparent and open manner, leading to the selection of beneficiaries that can address the environmental objective using the least amount of aid or in the most cost-effective way. Even if there was no tender in the traditional sense, a selection process on the basis of a short list did take place. In view of the specificities of the case, this can be considered acceptable as a qualitative assessment took place, also in relation to the EEPR funding.
78. Thirdly, the aid amount may not exceed the expected lack of profitability including a normal return over the time horizon for which the investment is fully depreciated. The NPV calculations under the most likely assumptions show a negative business case. In addition, the internal information submitted by the Dutch authorities did not point to any overcompensation in view of a final investment decision. Moreover, the Dutch authorities decreased the aid amount initially requested by the beneficiary. The Commission therefore considers that based on the information submitted the aid is limited to the minimum.

²⁴ The calculation is carried out similar to the calculation method set out in point 80-84 of the EAG.

79. Accordingly, on balance, the Commission considers that the aid is proportional.

ii. Effects on competition and trade between Member States

80. The Commission will assess the negative effects of the aid measure on competition between undertakings in the markets affected similar to section 5.2.2 of the EAG. The relevant markets in the present case are the CCS market and the electricity market where the (joint venture partners of the) beneficiary is active.
81. As a starting point, the likelihood that the beneficiary will increase or maintain sales as a result of the aid is assessed. On the electricity market, a potential effect of the project could be that the reduction of marginal costs due to reduced costs for obtaining EU ETS allowances allows the beneficiary to increase production compared to the counterfactual situation. At the same time the beneficiary has an energy penalty due to the energy consumption incurred by the CCS installation. Assuming an electricity price of €55/MWh, the energy penalty for 2015 is estimated at [...] which would correspond to a CO₂ price of almost €22/ton. Consequently, it is not likely that the aid measure has a significant effect on sales.
82. Further, the dynamic incentives and crowding out effects of the aid are assessed. As regards the CCS market, according to the Dutch authorities, the CCS technology is provided by the equipment manufacturers and not by the power generators. The equipment manufacturers will be selected by open tender. In addition, this CCS project is not foreseen to be the only CCS project. Therefore also the non-selected equipment manufacturers will have the opportunity to sell technologies to other projects. There is also no intellectual property rights creation foreseen for the beneficiary. As the Dutch authorities confirmed that the selected equipment manufacturer will not be under exclusivity obligations, the same manufacturer could construct a capture plant for competing utilities.
83. Furthermore, knowledge sharing is provided for in several ways. Firstly, the (joint venture partners of the) beneficiary joined the European CCS Demonstration project Network and signed the Knowledge Sharing Protocol. This Protocol sets out the principles and procedures for knowledge sharing within the abovementioned Network and clearly specifies what information should be shared concerning for instance technical set-up and performance, cost levels, project management, environmental impact and health and safety.
84. In addition, the beneficiary joined other groups such as CATO2 and ZEP which also aim to share knowledge and disseminate information about CCS (see paragraph 39 - 45). Also, the Dutch authorities have required the beneficiary to share the knowledge and experience gained with the industry, the Commission and the Dutch authorities. This includes the obligation to report on a yearly basis to the Dutch authorities about the activities carried out both in terms of technical data and in terms of knowledge sharing.
85. It is therefore not likely that the aid will crowd out investments in CCS technology or result in a concentration of CCS technology in one Member State.
86. In the case at hand, on the basis of the information provided, there is no evidence that the (joint venture partners of the) beneficiary are in poor financial health or that the markets affected by the aid measure are in overcapacity. In addition, large-scale CCS

projects do not constitute normal market behaviour. Although the aid amount is significant, it is limited with respect to the turnover of the two joint venture partners of the beneficiary. Also, the Dutch authorities selected the CCS project on the basis of a short list which was very much guided by the outcome of the application for EEPR funding. Therefore, it is considered that the notified measure would not maintain an inefficient firm in the market.

87. As regards potential competition concerns related to market power in the relevant markets identified, GDF/Suez has a 20 to 30% market share in the Dutch market for electricity retail supply to large customers. The HHI index will provide for an indication of market concentration in the Dutch market for electricity retail supply to large customers and the Dutch market for electricity retail supply to small customers. However, in view of the nature of the CCS project and the fact that it is unlikely that this will risk to differentiate products or to exclude competitors, the view can be taken that there are no competition concerns related to market power for the beneficiary on these markets.
88. Similarly, as regards the CCS market, although market shares are not available at this early stage of its development, the beneficiary or its joint venture partners cannot be seen as having market power or being active on this market. The technology provider will be selected by open tender. Therefore, the aid does not appear as likely to prevent new entry since other CCS projects could be supplied with the same technology. The aid does not appear to prevent entry on the electricity market either.
89. Therefore, according to the information provided, it can be considered that the notified project would not be used to strengthen or maintain the beneficiary's market power, thus negative effects are unlikely in this respect.
90. The Commission further notes that the aid is only granted to one CCS project and will not result in the specific area benefitting from more favourable production conditions, thus incentivizing other companies to relocate in the same territory. From the information submitted, it was not found that the location in the Rotterdam port area was driven by the aim to improve the general production conditions in the area.
91. The part of the CCS project related to the CO₂ transport and storage, might have a positive effect on the location as the planned pipeline will be oversized for dense phase to accommodate CO₂ from other sources and the storage site has got an excess capacity. Access to the pipeline and storage site will then be granted on open and non discriminatory market terms. Nevertheless, in view of the total capacity of the pipeline and even more of the storage site, the effect on improving the production conditions appears rather limited also to affect the general production conditions in the area.

iii Balancing and conclusion

92. On the basis of the information available, the Commission considers that the positive effects of the measure outweigh its negative effects so that on balance the effects of the measure are positive. The notified measure can, therefore, be considered compatible with the internal market in accordance with Article 107(3)(c) of the TFEU.
93. However, the Commission takes note of the submission by the Dutch authorities that under the present circumstances, with funding from both EEPR and the Dutch

authorities for the CCS project, there is no intention by the joint venture partners or the Dutch authorities to apply the notified CCS project for NER300 funding.

94. The conclusion on the compatibility assessment by the Commission is therefore strictly limited to the support of the Netherlands notified to the Commission under the present measure and takes into account only the national funding by the Netherlands and EEPR.

4. DECISION

The Commission has accordingly decided not to raise objections to the notified measure, because the aid can be found compatible with the internal market in accordance with Article 107(3)(c) of the TFEU and article 61(3)(c) of the EEA Agreement.

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Directorate-General for Competition
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State Aid Greffe
B-1049 Brussels
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For the Commission

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