APPENDICES

With the Advisory Review of the Obajana Cement Manufacturing Complex in Nigeria

(appendices 1 to 11)

APPENDIX 1

Letter from FMO dated 11 June 2004 in which the Commission has been asked to submit an Advisory Review of the Obajana Cement Manufacturing Complex in Nigeria.

FMO

Finance for *Development*

Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden NV

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T.a.v. de heer S. Morel
Postbus 2345
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Betreft: Dangote Cement Project/Nigeria

Geachte heer Morel,

Hierbij verzoeken wij u advies uit te brengen met betrekking tot de milieu- en sociale aspecten van de projecten die worden gerealiseerd in het kader van Dangote Cement Project in Obajana/Nigeria. Details zijn besproken met de leden van de werkgroep en haar secretaris. Onderstaand zullen de doelstelling, het normatief kader, de afbakening en de aanpak kort worden aangegeven.

Doelstelling

- Identificatie van (potentieel) relevante milieu- en sociale effecten, verbonden aan de huidige en geplande installaties en activiteiten van Dangote Cement Project (bestaat uit de realisatie van de cement fabriek zelf, een elektriciteit centrale (gestookt op gas), een kalksteengroeve inclusief de conveyor belt, een dam voor de watervoorziening en een ca. 90 km lange pijplijn voor de gasvoorziening);
- Beoordelen van de uitgevoerde milieu effecten rapportage (thans beschikbaar voor de gas pijplijn en de cement fabriek);
- Formulering van een richtlijn (Terms of Reference) waaraan een Environmental (& Social) Impact Assessment (nieuw EIA voor de geplande kalksteen groeve en supplementary EIA voor de overige activiteiten) zal moeten voldoen teneinde de negatieve effecten van de huidige en geplande installaties en activiteiten te kwantificeren en te toetsen aan het normatief kader, alsmede de mogelijkheden ter voorkoming of beperking van deze effecten, door het aangeven van alternatieven en mitigerende maatregelen.
- Eindbeoordeling van de definitieve (supplementary) EIA.

Normatief kader

- Lokale wet- en regelgeving;
- De Wereldbank en IFC richtlijnen en beleidsstukken, zoals die door FMO zijn geïncorporeerd in haar vastgestelde milieubeleid; (zie Annex 1)
- Het door FMO vastgestelde sociale beleid, en de daarin geïncorporeerde ILO conventies, de VN Universele Verklaring van de Rechten van de Mens, de VN Conventie voor de Rechten van het Kind, de VN Conventie inzake Eliminatie van alle Vormen van Discriminatie tegen Vrouwen, alsmede de overeengekomen doelstellingen van de Sociale Top in 95. (zie Annex 2)

Afbakening

- Alle voorgenomen investeringen zoals weergeven in de u ter beschikking gestelde projectinformatie;
- In het advies dienen de primaire en afgeleide milieu- en sociale effecten centraal te staan; daarnaast wordt aan observaties en "expert judgement" t.a.v. de technische kwaliteit van de bestaande en geplande installaties, alsmede t.a.v. liabilities veel waarde gehecht, maar maken geen deel uit van de formele adviesaanvraag; gaarne hieraan wel aandacht geven in een beknopt site-visit report;

Handelsregister
Haaglanden nr 270 78 545

APPENDIX 1 (continued)

Letter from FMO dated 11 June 2004 in which the Commission has been asked to submit an Advisory Review of the Obajana Cement Manufacturing Complex in Nigeria.

FMO
Finance for *Development*

- Milieu-, alsmede sociale aspecten, zoals afgebakend in het bijgevoegde milieu- en sociaal beleid van FMO; (zie Annex 1 & 2)
- De sociale dimensie dient zowel de interne (arbeidsvraagstukken en arbeidsrecht) als externe sociale aspecten te omvatten. Onder de externe sociale aspecten worden primair de effecten van de activiteiten en installaties begrepen, maar zeker ook de effecten van migratie en verdere industrialisering van een tot nu toe zeer landelijk gebied.

Aanpak
- Dossieronderzoek (documentatie gedeeltelijk reeds beschikbaar, grootste deel ter plaatse);
- Interviewen vertegenwoordigers bedrijf, overheid en de civiele samenleving (relevante NGO allianties of gebruikersbelangengroepen);
- Bezoek aan de relevante (vergunningsverlenende) overheden;
- Site visits, waarbij ook het traject van de gaspijplijn zal worden geïnspecteerd;
- Uitbrengen informeel beknopt verslag aan het eind van het locatiebezoek, gevolgd door een formeel Commissie MER advies.

Wij zenden u deze brief in tweevoud, indien u akkoord gaat gaarne één ondertekende kopie aan ons retour. Wij zien uw bevestiging met belangstelling tegemoet.

Hoogachtend,
Nederlandse Financierings-Maatschappij
voor Ontwikkelingslanden NV

Huub Cornelissen
Manager Investment and Mission Review

Voor akkoord Commissie MER

Naam S.A.A. Mark

Plaats en datum 15/6/2004

Annex 1 FMO and Sustainable Development (+ Exclusion List)
Annex 2 FMO Social Policy

APPENDIX 2

Project information

Proposed activity: Construction of an integrated cement production factory producing 5 million tonnes of cement per year at Obajana in Kogi State, Nigeria. The proponent is the Dangote group a private company based in Nigeria.

The Obajan cement factory will be supplied with marble, clay, laterite and raw materials form a dedicated quarry to be opened up at a distance of 8 km from the factory. The factory will comprise two cement production lines with kilns being fired by natural gas through as new pipeline from Ajaokuta, at a distance of 90 km. The factory will consume 1.8 million tons of water per year requiring the establishment of a dam to ensure continuity of supply through the dry season. Power for the factory will be provided by a dedicated power station comprising three 45MW gas fired engines driving turbines.

Categories: 14040 (River Development), 23062 (Gas Fired Power Plants), 32166 (Cement Industry), 32220 (Mineral Prospection and Exploration)

Project numbers: NCEIA 055

Progress: The Netherlands Bank for Finance (FMO) requested the Commission to review the EIA reports for the proposed activity. Therefore, from 20-27 June 2004 a site visit in Nigeria took place. The Commission has reviewed four EIA reports for the following activities, which together form the entire project: the quarry; the cement factory and power plant, construction of a dam and the gas pipeline. The Commission concluded that crucial information in the EIA reports is missing. This is essential information for adequate management of the environmental and social aspects of this project and it is recommended that this information should be supplemented.

Composition of the working group of the Commission for EIA:

Mr K.J. Beek (chairperson)
Mr O.D. Atte (local expert)
Mr P.A. Araoye (local expert)
Mr M. Clark
Mr G.C. de Jong
Mr J. Schittekat

Technical secretary:

Mr A.J. Kolhoff

APPENDIX 3

Programme of the visit

Date	Time	Activities	Participants
Sunday 20/06/04	7.45 p.m.	Arrival at Abuja Airport and transfer to Abuja Sheraton Hotel	working group NCEIA
	p.m.	Arrival at Lagos Airport	Stefan Michelberger
	p.m.	Arrival at Abuja Sheraton Hotel	Nigerian working group members
Monday 21/06/04	10.30 a.m.	Arrival at Lagos airport	Klaas Jan Beek and Arend Kolhoff (NCEIA)
	a.m.	Presentations at Dangote in Lagos: Approach of FMO and NCEIA	Stefan Michelberger, Klaas Jan Beek, Arend Kolhoff
	p.m.	Meeting with DPR and NGC	Stefan Michelberger, Klaas Jan Beek, Arend Kolhoff
	a.m.	Site visit Obajana Limestone Mining & Cement Manufacturing Complex: Meeting with management team of Obajana Cement Factory in Kogi State, accompanied by Sumaila Zubairu, General Manager Treasury of the Dangote Group and Abdul-Rahman Zubairu, Group Head Environmental Matters of the Dangote Group.	David Atte, Jacques Schittekat, Michael Clark, Pius Araoye, Gerco de Jong
	p.m.	Tour around the factory site, the dam and the housing estate.	David Atte, Jacques Schittekat, Michael Clark, Pius Araoye, Gerco de Jong
	4.15 p.m.	Return to Abuja	David Atte, Jacques Schittekat, Michael Clark, Pius Araoye, Gerco de Jong
Tuesday 22/06/04	a.m.	Meeting at the Federal Ministry of Solid Minerals and Ministry for Environment.	All team members
	p.m.	Meeting at the Federal Ministry of Solid Minerals, Abuja, led by the Permanent Secretary, Directors and General Manager of the Nigerian Mining Corporation.	All team members
	p.m.		All team members

Date	Time	Activities	Participants
23/06/04	a.m.	Meeting with management team of the cement factory in Obajana, including a briefing from the head of the dam EIA-team.	All team members
	p.m.	Visit to the factory, dam and quarry (mining site at Oyo - Iwa village) meeting people responsible/consultants and retired to the Confluence Beach Hotel, Lokoja.	All team members
24/06/04	a.m.	Briefing by the gas pipeline and plant/power/quarry EIA-teams at the Confluence Beach Hotel.	All team members
	10.00 a.m.	Inspection of the gas pipeline with the relevant EIA-team accompanied by the chief engineer of the Nigeria Gas Company. Stopped at the headquarters of Adavi Local Government Council and were received by the Council's Executive Chairman, Alhaji Abdul Rahman Badamasiu, the Vice Chairman, Yunusa Sadiq and the Osara Area Development Officer, Mr D.S. Abedoh who accompanied the team to all communities during the consultation process.	Gerko de Jong, David Atte, Stefan Michelberger
	10.00 a.m.	Visit to the Obajana Cement Factory.	Jacques Schittekat, Michael Clark
	5.30-7.30 p.m.	Meeting with special adviser on science, technology and external relations to the governor of Kogi State, Eric O. Fiki and the Commissioner for Solid Minerals, Kogi State, both at the Confluence Beach Hotel.	All team members
25/06/04	a.m.	Meeting at Kogi State Ministry of Solid Minerals, with officials led by Commissioner Bamidele Suru, the Permanent Secretary Mr T.S. Umoru and the Director Solid Minerals Mr Vincent Oluseyi Ayodele. Meeting at Kogi State Government House with government officials led by the Executive Governor of Kogi State Alhaji Ibrahim Idris, the Deputy Governor Mr Philip Dalawu the Commissioner for Solid Minerals Bamidele Suru and the Commissioner for Environment and Physical Development Mr Mohammed Sadiq.	All team members apart from Jacques Schittekat and Michael Clark
	a.m.	Visit to the Obajana Cement Factory	Jacques Schittekat, Michael Clark

Date	Time	Activities	Participants
	p.m.	Meeting with Commissioners for Solid Minerals and Environment and Physical Development	Klaas Jan Beek, Gerco de Jong and Pius Araoye
	p.m.	To Oyo-Iwa (Community hosting the dam, housing estate and quarry) and Obajana (community hosting the factory). Meeting with the Baale (Head Chief) of Oyo, Chief Solomon Obahawu and the Eleso (Head Chief of Iwa) Chief Oloruntoba Ikusika and some of their subjects. At Obajana meeting with the Village Head, Village Secretary, the Crown Prince and some of their subjects.	David Atte, Arend Kolhoff and Stefan Michelberger
	6.00 p.m.	Leave Lokoja for Abuja	All team members
26/06/04	a.m. and p.m.	Presentation of results to Dangote after feedback from Dangote to local, state, national authorities.	All team members
27/06/04	p.m.	Transfer to airports	All team members

APPENDIX 4

Documentation for review
EIA reports and additional information

The review by the Commission is based upon the following EIA reports and additional documents:

Quarry:

- Draft working document (version 25 June 2004) of the Obajana cement plant EIA report (drafted by Mina Laurel Limited);
- Mining license provided by the federal Ministry of Solid Minerals;
- Mining works schemes, mine cores review, discussion with Mr Abdul Rahman Zubairu (Dangote Group), Mr Usman Jibrin (Dangote Group), Mine responsibles, Mr Amina Asimiea the author of the EIA;

Cement factory and power plant:

- Draft working document (version 25 June 2004) of the Obajana cement plant EIA report (drafted by Mina Laurel Limited);
- Provisional approval by the federal Ministry of Environment;
- Equipment flow sheets have been provided by the Obajana Cement Company.
- Interviews have been conducted with the General Managers for Mechanical Engineering, Quality Control and the Power Plant.

Dam construction:

- A preliminary draft EIA report for the dam (unofficial version 24 June 2004, drafted by Biogeochem Associated limited). The draft EIA report is planned to be sent for review to the Federal MoE in July 2004;

- Feasibility and detailed design of an earth dam at Obajana (H&M Consultants), various field investigation reports, discussion with Mr Subrah Manyam (Dangote group), Mr Abdul Rahman Zubairu (Dangote Group), Mr Usman Jibrin (Dangote Group) as well as with the authors of the EIA.

Gas pipeline:

- Environmental Impact Assessment of the Ajaokuta-Obajana Gas Pipeline Project, (February 2004).

- Gas Pipeline from Ajaokuta to Obajana Cement Factory, Front End Engineering Design (July 2003)

- Gas Pipeline from Ajaokuta to Obajana Cement Factory, Hazard Operability Study, (March, 2004)

- Detail Engineering documentation was not available at Obajana, since the engineering work is performed in Lagos. A Quality Handbook, or Quality Plan covering design, construction and transfer for the project could not be demonstrated. The con-

tractor reportedly has a Quality Plan available, however this could not be verified during the mission;

- OPL license provided by the federal Department of Petroleum Resources.
- Provisional approval by federal Ministry of Environment;
- Interviews and discussions were held with representatives of Dangote, Zishan Engineers, ACC and Ambah Projects Limited and NGC. The pipeline route was viewed emphasizing the critical points of the envisaged pipeline route.

APPENDIX 5

Detailed assessment of the cement manufacturing and the thermal power plant

In this Appendix the cement manufacturing operation and thermal power plant are assessed in detail by using the Worldbank guidelines as a reference framework.

1. The dry process with preheaters and precalciners are environmentally and economically preferable, as is the case at Obajana.
2. Ventilation systems in conjunction with hoods and enclosures should be provided for transfer points and conveyors. The Obajana cement factory will include more than 110 such ventilation systems (dust filters) located on all such transfer points and conveyors, in addition to airslides, storage hoppers and silos.
3. Drop distances for raw materials should be minimised by use of adjustable conveyors. The raw material blending and storage equipment at Obajana includes such an adjustable "luffing" boom for stacking raw materials. In addition the raw material stockpiles will be enclosed in a 450x110x28m shed further containing any dust generated.
4. Appropriate storm-water and runoff control systems must be provided to minimise quantity of suspended material carried off site. Extensive rainwater gulleys and culverts for this purpose are provided for in the design and layout of the site. These will be discharged to the river and must be provided with a settlement tank incorporating fat trap to collect any suspended materials and oil residues contained in the run-off water, as set out above.
5. Electrostatic precipitators and baghouses are the principal options for collection and control of particulate (dust) emissions. The kiln and cooler exhaust stacks of the Obajana kilns are equipped with electrostatic precipitators which are guaranteed to reduce the dust emission to below 30 mg/Nm3, compared with the Nigerian standard of 230 mg/Nm3(maximum), and the World Bank guideline of 50 mg/Nm3(maximum). Following the uprating of the kilns from 5000 to 7000 tonnes per day (tpd) additional high voltage fields have been added to these precipitators to ensure that the guaranteed dust emission will continue to be achieved. The exhaust stacks of the cement mills at Obajana are equipped with baghouses.
6. Collection cyclones for preconditioning of gases should be installed ahead of electrostatic precipitators or baghouses. The raw mills at Obajana are provided with such collection cyclones ahead of the main kiln and raw mill electrostatic precipitators.
7. Exhaust gas stacks for the kiln, cooler and cement mills will each be provided with continuous dust emission monitors.
8. NOx emission should be controlled by the design of the kiln and burner and operating with an optimum level of excess air. The kilns at Obajana will be fired with FL Smidth Duoflex burners designed for low NOx emissions. In addition the combustion gases from the kiln will pass through an in-line precalciner at the base of the preheater providing further NOx reduction via the mechanism of staged combustion.
9. SOx emissions should be controlled by using low sulphur fuels and raw materials. The natural gas which will be used to fire the cement kilns contains no sulphur. The raw materials also do not contain any appreciable sulphur as pyrites or sulphates. While these raw materials are used there will be no emissions of SO2 from the cement factory.
10. The power station on the Obajana cement factory will also be fired with natural gas, which provides a decisive advantage in terms of emissions. Monitoring and reporting of particulate and SOx emissions are not required for engine driven power plants fired with natural gas.
11. Gas firing of the kilns and power plant provides the added advantage of reducing the emissions of the greenhouse gas, CO2, in comparison with cement plants firing coal or fuel oil.

12. The remote location of the power plant from the main cement factory equipment and buildings mean that no restrictions need to be applied to the heights of the exhaust stacks. These stacks will be 90 feet high.
13. Exhaust gas sampling points will be provided in the stacks for the purposes of NOx emission testing and reporting.
14. Noise levels for the cement factory will be controlled to less than the maximum 70 dB(A) permitted by the provision of silencers on engines and location of major noise generating equipment within acoustic buildings and enclosures.
15. The engines of the power plant will also be enclosed within acoustic buildings. The noise level of the engines is guaranteed to be less than 85 dB(A) at 1.5m distance from the engines themselves. Outside the buildings the noise level will be significantly lower than the 70 dB(A) permitted under the guidelines.
16. Cement factory process water for equipment cooling and evaporative cooling and conditioning of exhaust gases prior to electrostatic precipitation will be a closed system with no discharge to local water-courses. Make-up water to replace the water consumed by evaporative cooling will be drawn from the reservoir created by the dam. Two cooling towers are provided for control of the temperature of the equipment cooling water below 50°C.
17. The power plant will be provided with a separate raw water intake. This water will be taken through a demineralization plant and circulated through water jackets on the equipment. Finally it will be sprayed into the engines for chilling and NOx suppression purposes. There will be no discharge to local water-courses.

APPENDIX 11

Acronyms and Abbreviations

ACC	Associated Cement Company
ASC	Ajaokuta Steel Company
ASTM	American Society for Testing and Materials
Cr	Chromium
EIA	Environmental Impact Assessment
FEED	Front End Engineering Design
FMO	Netherlands Development Finance Company
HSE	Health, Safety and Environment
ICOLD	International Commission of Large Dams
IFC	International Finance Corporation
l/d	litres per day
LG	Local Government
NGC	Nigerian Gas Company
NGO	Non Governmental Organisation
OCP	Gas pipeline of Crude Petroleum
Pb	Lead
RoW	Right of Way