

# ***Niger Delta Natural Resource Damage Assessment and Restoration Project***

## **Phase 1 – Scoping Report**

Federal Ministry of Environment, Abuja  
Nigeria Conservation Foundation, Lagos  
WWF UK  
CEESP- IUCN Commission on Environmental, Economic, and Social Policy

May 31, 2006

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### **EXECUTIVE SUMMARY**

Fifty years after the discovery of oil in Nigeria's Niger Delta, an independent team of experts from Nigeria, the UK, and the United States convened by the Nigerian Conservation Foundation concluded that the Niger Delta is one of the world's most severely petroleum-impacted ecosystems. This conclusion was reached after a Natural Resource Damage Assessment and Restoration scoping visit to the Niger Delta from May 21 – May 29, 2006. The team of experts, with participation by Nigeria's Ministry of Environment, WWF UK and the IUCN Commission on Environmental, Economic and Social Policy visited Delta communities and spill-damaged sites in Rivers, Bayelsa and Delta states, met with community and youth leaders, and convened a 2-day workshop of leading government and non-governmental experts in Port Harcourt May 25 – 26..

The 70,000 square kilometers Niger Delta contains 7,000 of Africa's 9,000 square kilometers of mangroves, and is considered one of the 10 most important wetlands and marine ecosystems in the world. Millions of people depend upon the delta's natural resources for survival, including the poor in many other West African countries who rely on the migratory fish from the Delta. The region contains many threatened species found nowhere else in the world, including several primates, ungulates and birds.

Among the preliminary findings of the independent team were:

1. An estimated 9 million – 13 million barrels (1.5 million tons) of oil has spilled in the Niger Delta ecosystem over the past 50 years, representing about 50 times the estimated volume spilled in the Exxon Valdez Oil Spill in Alaska in 1989. This amount is equivalent to about one "Exxon Valdez" spill in the Niger Delta each year.
2. The financial valuation of the environmental damage caused by 50 years of oil and gas activities in the region - taking into account the unique and productive character of the ecosystem as well as comparable valuations on other such ecosystems – would be tens of billions of dollars.

3. In addition to spills, damage from oil and gas operations in the region has included extensive habitat degradation from road building, forest clearing, dredging and filling; pollution from gas flaring and operational discharges, and increased population pressure from immigration to the region.
4. Oil development occurred in the Delta without a comprehensive, strategic plan which would have protected its natural resources. Many of the oil facilities and operations are located within sensitive habitats - including areas vital to fish breeding, sea turtle nesting, mangroves and rainforests - that have often been severely damaged, contributing to increased biodiversity loss and poverty.
5. The damage from oil and gas operations is chronic and cumulative, and has acted synergistically with other sources of environmental stress to result in a severely impaired coastal ecosystem and compromised livelihoods and health of the regions impoverished residents
6. Rural communities in the Niger Delta have suffered most of the environmental and social costs of 50 years of oil development, and claim to have received very little of the benefits. This is a significant contributor to the current violence, sabotage of pipelines/installations and instability in the region.
7. Oil companies operating in the Delta have not employed best available technology and practices that they use elsewhere in the world – a double standard. They can easily improve their environmental performance in the region. Old leaking pipelines and installations must be replaced immediately and dumping of waste must stop.
8. A comprehensive Environmental Restoration Programme should be developed and implemented immediately. This independent effort should be supported financially by the oil and gas industry in the region as well as International Development Agencies.

Subject to agreement with all parties, Phase II of the project (the remainder of 2006) will: 1) more concisely estimate natural resource damages caused by 50 years of oil and gas activities on the Delta; 2) develop a Restoration framework with budgets estimations, and an implementation plan, and; 3) develop specific recommendations to improve the environmental performance of the oil Industry in the region, particularly spill prevention and response preparedness.

***Note: The project had participation from scientists and other experts from the Niger Delta region. The views expressed are those of the participants and authors and not necessarily those of their parent organizations.***

# PHASE I – SCOPING REPORT

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## 1. OVERVIEW OF ISSUES

The Niger Delta was one of the 10 most important and productive wetland and marine ecosystems in the world. It is still rich in biodiversity but this has been damaged. The 20 plus million inhabitants depend upon its biodiversity for their livelihoods and their survival. Nigerian scientists claim that 60% of the fish caught in West Africa breed in the coastal marine ecosystem which includes the vast Delta mangroves.

The terrestrial and marine environments have both been badly injured and one of the primary causes is the oil industry and associated industries including the production of plastic bags. The Delta is one of the 5 most severely petroleum damaged eco systems in the world. It may even be worse than other notoriously impacted regions such as Azerbaijan, Kazakhstan, Siberia and Ecuador.

During the scoping mission the group studied all available figures for oil spills (bearing in mind that they were not complete) and came to the conclusion that the quantity of oil spilled over 50 years was at least 9-13 million barrels; equivalent to 50 Exxon Valdez spills. This makes the Delta one of the 5 most oil polluted environments in the world. This level of pollution partly explains why the poor are getting poorer not just in the Niger Delta but in many other countries which depend upon fish migration from the Niger Delta for their survival.

## 2. PHASE I ASSESSMENT METHODOLOGY (May, 2006)

The Phase I project core team consisted of:

Prof Emmanuel Obot	Director of Nigeria Conservation Foundation, Lagos IUCN-CEESP
Prof Q B Antonio	Professor of Agriculture Economics, Ibadan
Dr Solomon Braide	Rivers State University, Institute of Pollution Studies, Port Harcourt
Mathew Dore	Director of Biodiversity Ministry of Environment, Abuja

Clive Wicks Conservation and Development Consultant, Representing WWF UK and CEESP (IUCN Commission on Environmental Economic and Social Policy), London UK

Prof Richard Steiner Professor, University of Alaska (USA), IUCN CEESP, and Chief Technical Advisor to Government of Pakistan on spill damage assessment, USA

The project team visited the Delta from May 21 – May 29, and met with village chiefs, community and youth groups and went with them to see a number of heavily polluted sites in Rivers, Bayelsa and Delta States. The team examined the impacts of oil spills on land, rivers and brackish waters. Some of these sites were still being polluted by oil (Kidaro Creek, Rivers State). The team examined sites where oil products had been buried and were leaching into the environment, and sites which were reported as cleaned up but oil was still leaching out; the sludge pit and leaking oil tanks and leaks at the truck tanker parking area in the tank farm at the WRPC in Warri - all of these were leaking into the water systems. Some team members visited Bonny Island and over flew canalization, dredging fill sites, operating rigs, gas flares, oil in water, and the NLNG plant.

The team assessed community relations with oil industry, socio economic impacts and community perceptions and expectations, including the impacts of gas flaring and spills. The team visited one protected area – Taylor Creek Forest Reserve - and discussed management problems with local communities. Preliminary assessment of mangrove ecosystem injury, and visited with commercial fishermen in a heavily oiled mangrove system. And, the team visited a fish pond, and the West Africa Aquaculture Center.

### **3. OVERVIEW OF DAMAGE**

Oil and gas activities have caused damage in several forms to the Delta. In *exploration*, seismic lines have cleared significant forest areas, and seismic crews have generated thousands of tons of waste, all disposed untreated directly into the ecosystem. In *production*, there is a considerable amount of dredging and filling of the water ways, siltation, sulfidic dredge spoils leading to acidification of water bodies, erosion, spills (well blowouts and facility failures), pollution from gas and associated oil flaring, discharge of huge amounts of production water containing significant quantities of hydrocarbons, and drilling mud discharges. In *transportation*, laying of several thousand miles of oil and gas pipelines across Delta habitats has resulted in significant habitat damage and loss, pipeline and tanker spills, and storage tank spills. And in *refining*, toxic sludge discharges and process spills pollute waterways, flaring and stack emissions pollute the atmosphere, and refined products (particularly petrochemicals) further enter the ecosystem.

It is the team's professional judgment that the Niger Delta is one of the most oil-impacted ecosystems in the world. Water ways and marine systems have been badly polluted. Residents, particularly the poorest people, have been badly affected by environmental damage and pollution from the oil industry and other sources. Fishing – a mainstay of the Delta rural economy - has been reduced in both fresh water and marine eco-systems. Near-shore illegal fishing by commercial trawlers and pollution are two of the main causes of reduction of fish populations. Forests and agricultural land have been damaged by chronic spills and atmospheric pollution.

The group studied all available volume figures for oil spills, bearing in mind that they were not complete, and extrapolating from government figures came to the conclusion that the quantity of spill over 50 years has been minimum of between 9-13 million barrels; equivalent to about 50 Exxon Valdez spills. See appendix 2. This makes the Delta one of the 5 most petroleum polluted environments in the world.

We recognise that there are many sources of environmental damage in the Delta, but clearly a major *controllable* source of environmental and social degradation is the oil industry. Leaks from old, corroded and poorly maintained pipelines and installations including both producing and abandoned offshore shore rigs, oil in produced water, refinery effluent and toxic sludge, toxic drillings mud, tank and tanker hold washing, oil in gas flares, blow outs and other spills occur continuously. Many of these spills are now being caused by the many disenfranchised residents.

Socioeconomic impacts were found to be severe as well. Pollution impacts heavily on the health of humans and resources such as agricultural land, fresh water, mangroves, fish and shellfish. Perceived oil company indifference to human suffering from oil spills, gas flaring and the activities affecting the environment and people has caused many serious problems. The current situation is very delicate as the communities are bitter, angry and distrust the oil companies. Even the oldest communities such as Oloibiri the first oil village (1958) see little or no benefits. There is high unemployment (over 50% of youths) fishing-a basic employment and income source is being damaged by pollution and illegal near shore fishing by International Trawlers.

#### **4. NATURAL RESOURCES IN NEED OF RESTORATION**

The team feels that all areas with oil and gas operations should be evaluated and prioritized for remediation and Restoration potential. Some areas that were impacted decades ago may receive a lower priority for intervention than others. Phase II of the project will address this issue in more detail. But in general, some of the resources in need of Restoration include the following:

1. forest habitats - mangroves, lowland rainforests, swamp forests, and barrier island forests cleared or degraded by oil activities
2. agricultural sites – where significant spills have occurred
3. hydrological characteristics – water flows damaged by road building, channels, filling, and invasive species such as water hyacinth and *Nypa* palms
4. safe drinking water availability
5. marine ecosystem – damaged by spills, process water, dumping of rubbish and equipment, abandoned oil rigs, tanker washing.
6. fisheries - illegal fishing by large commercial vessels, particularly those fishing within the fish breeding grounds at the mouth of the many river estuaries, and habitat loss, pollution damage
7. wildlife populations – reduced as result of over-harvest by residents and oil workers.
8. air quality – damaged by gas flaring, refinery emissions, car emissions.

Important here is that direct cleanup needs to occur on severely polluted sites, and a Restoration program should include both direct and in-direct initiatives.

## **5. RESTORATION MODELS**

There are several conceptual models that can be utilized to frame a Restoration program for the Niger Delta. These will be examined, and adapted to produce a Niger Delta Restoration Framework in Phase II of the project.

But in general, coastal ecosystem restoration models that will be examined to develop the Niger Delta framework are as follow:

1. UNEP Damage Assessment and Restoration Framework, which was drafted by one of the project team.
2. the NRDA & R model employed in the United States may be of use.
3. World Bank Environmental Development Strategy for the Niger Delta.
4. Akassa model (community development)
5. Exxon Valdez Oil Spill Restoration Program (the largest such coastal restoration program)
6. River Thames in London restoration program
7. Other Community Restoration models
8. Mangrove restoration models, Professor Obot and others in Asia

## **6. PRELIMINARY RECOMMENDATIONS**

*Overall Goal* – to reestablish the full function, structure, and ecological character of the Niger Delta...clean seas, waters, air, land, forests and fish for the people of the Niger Delta

### *Socio-Economic Recommendations*

- The Niger-Delta could have a much more developed and productive society if the key natural resources were protected and enhanced and the people move away from an “Oil Mentality”. They need to develop a “Sustainable Vision for their Future”
- The social and economic value of the Niger delta resources must be re-established to avoid short-term economic decisions being taken to the detriment of long-term benefits.
- The oil dependence mind set within companies and communities needs to be changed. Oil is finite and communities need to be educated to think of their future after oil is exhausted and the need to protect and develop their natural resource base which will give them a sustainable future.
- Institutional arrangements needed to be strengthened and communities educated and empowered to detect, report and monitor oil spills, resource degradation and participation in clean-up and monitoring restoration.
- A way has to be found to stop communities from looking at oil spills as a commercial asset and make them realize that the spills they create are causing long term damage to their future and their children’s. An environmental education programme would help.

- The current system of evaluating oil spill damage and compensation is not satisfactory, fair or acceptable to the communities.
- The oil spill assessment needs to be quick, transparent, credible and independent of the oil companies and over viewed by the Ministry of Environment (Nosdra). Radio equipment/mobile phones should be provided to key communities. Reports must be made within one day
- Frequent over flights and satellite monitoring of the Niger Delta must be established to monitor oil spills and to control illegal fishing by international trawler fleets, bunkering and piracy and oil monitoring. (Some men on trawlers are even shooting at local fishermen in inshore waters where the trawler has no right to fish)
- There is a need for more effective support from the government to the communities. Better information is needed to help communities and government make the right decisions on resource management. This should include an enhanced data base collection, collation and analysis.
- The use of independent mediators could help improve relations between the communities, the oil industry and government agencies.
- The potential of Women has not been sufficiently realized in terms of employment, restoration and their role as mediators particularly with the youths. Women need to be included, appreciated and empowered to participate, mediate and monitor community activities including restoration projects.
- Future oil exploration should be developed in such a way that vital biodiversity hot spots essential for human survival are protected including fish breeding grounds.
- Laws needed o be reviewed, updated and all international conventions ratified.
- Compliance enforcement agencies at all levels must enforce laws and receive adequate resources to do so.
- The Government agencies responsible for ensuring that the communities are treated fairly by the Oil companies must be given adequate resources and empowered to ensure that Oil companies follow International and National standards and avoid community problems.
- The Oil companies community based programmes are often not well developed or implemented and many have failed. Oil companies should not attempt to manage Rural Development programmes. They should provide the finance but leave the planning and implementation to specialist rural development NGOs and the communities.
- Those subsidies and incentives provided by the oil companies which divide communities and create a negative dependence culture should be discouraged. Positive incentives to help community development and environmental protection and community sustainability should be encouraged.

**Helping to make whole communities sustainable will gradually change community and oil company attitudes.**

*Environmental Recommendations*

- Phase II should include a more concise estimate of natural resource damage over 50 years, put a financial value on damage, and develop a Niger Delta Restoration Framework.

- The existing protected areas and critical biodiversity hotspots must be provided with adequate funds to restore and protect them.
- The marine environment needs to have a Strategic Environmental Appraisal (SEA) which would include mapping, critical fish breeding sites and migratory routes identified and protected.
- New no-take marine protected areas need to be created to restore fish populations. International trawler fleets must be stopped from fishing in areas which damage artisanal fishermen's livelihoods which are already damaged by oil pollution.
- The institutional structure to protect the environment must be strengthened and empowered.
- Dumping waste into the marine and other critical ecosystems must be stopped immediately.
- Waterways which have been seriously damaged by roads and canal construction must be restored.
- The marine environment (853 kms long) is not effectively managed. An Institutional review should be carried out which would create an institution to manage the marine ecosystem sustainably, and generate adequate funding for key stakeholders including critical research and monitoring institutions.
- Oil companies must comply with all national and international standards.
- All polluted sites must be cleaned up at the cost of the company concerned except where they are caused by sabotage,
- Abandoned oil facilities must be removed from the Niger delta to avoid accidents and oil spills. Until removal, they should be well marked. A Dismantling, Removal, and Remediation (DR&R) Fund should be established by the oil companies, to be assured that funds will be available to remove all facilities when they are closed.
- No new oil license should be issued until companies have rectified and cleaned up current problems
- Oil companies must regularly report compliance with their own corporate social and environmental policies on the Niger Delta.
- Government must enhance its oversight and management of the oil industry.
- Ministries responsible for the environment, health, fisheries and agriculture must be empowered with adequate funds and means to supervise the oil industry in safety and be independent of the oil industry.
- Plastic bags should be banned and bags dredged from rivers in the delta.

#### *Communication, Education, and Public Awareness Recommendations*

- Environment and sustainability issues should be mainstreamed in institutions of higher education to create awareness on the environment and sustainable development.
- Environmental education programmes should cover all communities affected by oil.
- Provide adequate information and awareness to decision makers and civil society so that they can engage effectively in the oil industry.

## Appendix I

### Some severely oil - polluted sites in the Niger Delta (from Port Harcourt Workshop)

Location	Environment	Impacted Area (ha)	Nature of Incidence
<b>Bayelsa State</b>			
Biseni	Freshwater Swamp Forest	20	Oil spillage
Etiama/Nembe	Freshwater Swamp Forest	20	Oil spillage & fire outbreak
Etelebu	Freshwater Swamp Forest	30	Oil spill incidence
Peremabiri	Freshwater Swamp Forest	30	Oil spill incidence
Adebawa	Freshwater Swamp Forest	10	Oil spill incidence
Diebu	Freshwater Swamp Forest	20	Oil spill incidence
Tebidaba	Freshwater Swamp Forest Mangrove	30	Oil spill incidence
Nembe Creek	Mangrove Forest	10	Oil spill incidence
Azuzuama	Mangrove	50	Oil Spill Incidence
9 sites			
<b>Delta State</b>			
Opuekeba	Barrier Forest Island	50	Salt water intrusion
Jones Creek	Mangrove Forest	35	Spillage & burning
Ugbeji	Mangrove	2	Refinery wastes
Ughelli	Freshwater Swamp forest	10	Oil spillage – Well head leak
Jesse	Freshwater Swamp Forest	8	Product leak/burning
Ajato	Mangrove		Oil Spill Incidence
Ajala	Freshwater Swamp Forest		Oil Spill Incidence
Uzere	Freshwater Swamp Forest		Oil Spill Incidence
Afiesere	Freshwater Swamp Forest		Oil Spill Incidence
Kwale	Freshwater Swamp Forest		Oil Spill Incidence
Olomoro	Freshwater Swamp Forest		Oil Spill Incidence
Ughelli	Freshwater Swamp Forest		QC
Ekakpare	Freshwater Swamp Forest		Oil Spill Incidence
Ughuvwughe	Freshwater Swamp Forest		Oil Spill Incidence
Ekerejegbe	Freshwater Swamp Forest		Oil Spill Incidence
Ozoro	Freshwater Swamp Forest		Oil Spill Incidence
Odimodi	Mangrove Forest		Oil Spill Incidence
Ogulagha	Mangrove Forest		Oil Spill Incidence
Otorogu	Mangrove Forest		Oil Spill Incidence
Macraba	Mangrove Forest		Oil Spill Incidence
20 sites			
<b>Rivers State</b>			
Rumuokwurusi	Freshwater Swamp	20	Oil Spillage
Rukpoku	Freshwater Swamp	10	Oil Spillage

Ebubu-Ochani Eleme	Freshwater Swamp	25	Oil Spillage
Bomu	Freshwater Swamp	12	Oil Spillage
Obigbo	Freshwater Swamp		Oil Spillage
Umuechem	Farm Bush Mosaic		Oil Spill Incidence
Obrikom	Freshwater Swamp		Oil Spill Incidence
Okpomakiri	Mangrove Forest		Oil Spill Incidence
Ke-Dere	Mangrove Forest		Oil Spill Incidence
Krakrama	Mangrove Forest		Oil Spill Incidence
Orubiri	Mangrove Forest		Oil Spill Incidence
Ekrikene	Mangrove Forest		Oil Spill Incidence
Ekulama	Mangrove Forest		Oil Spill Incidence
Oshie Ahoada	Freshwater Swamp	15	Oil Spillage
Oshika	Freshwater Swamp		Oil Spill Incidence
Oyakama	Freshwater Swamp		Oil Spill Incidence
Ebocha	Freshwater Swamp	10	Oil Spillage
Rumuekpe	Freshwater Swamp	25	Oil Spillage
Nonwa	Mangrove Forest	25	Oil Spillage
Ekuleama	Mangrove Forest	20	Oil Spillage
Bodo West	Mangrove Forest	10	Oil Spillage
Bonny	Mangrove Forest	20	Oil Spillage
Okrika	Mangrove Forest	10	Discharge of refinery wastes
24 sites			
<b>Abia State</b>			
Owaza	Freshwater Swamp Forest	50	
1 site			

#### Note

1. These figures are not a complete record and they do not include any Marine spills which were some of the worst, individual Marine spills were as high 500,000 barrels twice Exxon Valdez (250,000 barrels) notably:

Place	Incident	Year	Barrels
Forcados	Oil spill	1979	570,000
Foniwa	Oil spill	1980	400,000
Apoi North	Oil spill	1980	280,000

2. The area affected is only an estimate of the land area affected this does not indicate the impact on streams, rivers, lakes and ground water supplies affected. Impact on Fresh Water Swamp Forests and Mangrove ecosystems has also not been calculated adequately.

## Appendix 2

### Calculations of Oil Spills

Source of Data	years	Spills	Quantity Millions of Barrels	Ave per Year
Nigerian Oil spill conference 1991 (Federal government figures)	1976-1990	2796	2.1	0.15
Extrapolated over 50 years			7.5	
However this does not include the fact that many spills were not reported particularly during the Bafarian war nor does it include oil in drilling mud's, oil in gas flaring or oil in process water (The World Bank ratio of oil in produced water to oil spill volumes 1:3)			2.5	
Total			10	

Volume estimates of oil spills are usually low as 50% of Nigerian oil is assumed to evaporate within 48 hours and spills are not usually detected in that period

The refinery discharges are not included nor are spills from Tanker washing their tanks at sea or from road Tanker accidents, leaks from Refineries, machinery operations or disposal of old lubricating oils from cars and trucks etc

**The minimum range of total spills is therefore from Million barrels Equivalent to 36-50 Exxon Valdez Spills**  
(based on extrapolations from government figures)

**9-13**

### Appendix 3

NAMES OF PEOPLE WHO ATTENDED WORKSHOP IN PORT  
HARCOURT 26-27<sup>th</sup> May 2006

S/NO	NAME	AFFILIATION	PHONE	E-MAIL
1.	Dr. C.E Isebor	Nig. Inst. For Oceangraph & Mar. Kes. Lagos	08033127885	<a href="mailto:ekaeteukut@yahoo.com">ekaeteukut@yahoo.com</a>
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3.	Dr. Isi Ikhuoria	University of Benin Benin City	08033712799	<a href="mailto:ikhuoria@umiben.edu">ikhuoria@umiben.edu</a>
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6.	Clive Wicks	Representing WWF UK, IUCN-CEESP	00-44-1372- 452258	<a href="mailto:Clive.wicks@wicksfamily.plus.co">Clive.wicks@wicksfamily.plus.co</a>
7.	Prof. Richard Steiner	University of Alaska (IUCN/CEESP)	1-907-786- 4156	<a href="mailto:afrgs@vaa.alaska.edu">afrgs@vaa.alaska.edu</a>
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9.	M. P. O. Dore,	Director of Biodiversity Federal Ministry of Environment	08023367704	<a href="mailto:mpe_dore@yahoo.com">mpe_dore@yahoo.com</a>
10.	Dr. Eleoke Chukuigwe	Dept of Agriculture Econ Rivers State Unitech, PH	08033385496	<a href="mailto:drecchukuigwe@yahoo.com">drecchukuigwe@yahoo.com</a>
11.	Dr. Data Ekine	Ditto	08036768810	<a href="mailto:dataekine@yahoo.co.uk">dataekine@yahoo.co.uk</a>
12.	Prof. Q,B O	Care (Nig.) P.O.	0802-611-	<a href="mailto:johnbede@yahoo.com">johnbede@yahoo.com</a>

	Anthonio,	Box 20066 Ibadan	0417	
13.	Young Kigbara	MOSOP-Ogoni peoples Organisation	0806-429- 7460, 084-233907	<a href="mailto:ykigbara@yahoo.co.uk">ykigbara@yahoo.co.uk</a> <a href="mailto:mosop@phca.linksewe.com">mosop@phca.linksewe.com</a>
14.	P.M Ogolodom,	Rivers State, Min. of Env.	08035530378	
15.	G.N Kamalu	FMENV, PH	08037070052	<a href="mailto:Goddykamalu2@yahoo.com">Goddykamalu2@yahoo.com</a>
16.	Eils Obiebi	Min. of Env, Asaba	08032360212	
17.	Dr. Victor Fodeke	Fed. Mins. Of Env, Delta State	08036460880	<a href="mailto:vafodeke@yahoo.com">vafodeke@yahoo.com</a> , <a href="mailto:vicfodeke@gmail.com">vicfodeke@gmail.com</a>
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