

**NDF Ex-post Evaluation of
NDF-156: Mining Sector Development and Environment
Project, Ghana**

Prepared by Finnish Consulting Group (FCG)

Final Draft Report
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Acronyms

APL	Adaptive Program Lending
BGS	British Geological Survey
CCSHM	Convention Concerning Safety and Health in Mines (Convention 176, 1995)
CF	Consolidated Fund
CGS	Council for Geoscience of South Africa
CMA	Central Management Agency
COWAP	Community Water Project
CSR	Corporate Social Responsibility
CWSA	Community Water and Sanitation Agency
DA	District Assembly
DPO	Development Policy Operation
EC	European Commission
EC	Environmental Certificate
EDF	European Development Fund
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EIS	Environmental Impact Statement
EITI	Extractive Industries Transparency Initiative
EMC	Environmental Management Committee (in Districts)
EMP	Environmental Management Plan
EMS	Environmental Management System
EP	Environmental Permit
EPA	Environmental Protection Agency
ERP	Economic Recovery Programme
EPC	Environmental Protection Council
ERSO	Economic Reform and Support Operation
EU	European Union
EUR	EURO
FD	Forestry Department
FDI	Foreign Direct Investment
GAP	Ghana Water and Sewerage Corporation Assistance Project
GBS	General Budget Support
GCM	Ghana Chamber of Mines
GDP	Gross Domestic Product
GEITI	Ghana Extractive Industries Transparency Initiative
GEUS	Geological Survey of Denmark and Greenland
GGTCP	Ghanaian-German Technical Co-operation Project
GGMPP	Ghanaian-German Mineral Prospecting Project
GGS	Ghana Geological Survey (future institution)
GIS	Geographic Information Systems
GOG	Government of Ghana
GPRS	Ghana Poverty Reduction Strategy
GS	Geological Survey
GSD	Geological Survey Department
GTK	Geological Survey of Finland
GTZ	German Agency for Technical Co-operation
GWSC	Ghana Water and Sewerage Corporation
GWC	Ghana Water Corporation
GU	Global Utmaning (Swedish NGO)
HIPC	Highly Indebted Poor Country
ICME	International Council on Metals and the Environment (ICME),
ICMM	International Council for Metals and Minerals
IDA	International Development Association
IFC	International Finance Corporation
ILC	International Labour Conference of the International Labour Organisation, Geneva, 1995
IRS	Internal Revenue Service

ISODEC	Integrated Social Development Centre
LFA	Logical Framework Analysis
LGPRSP	Local Governance and Poverty Reduction Support Program
MAC	Mining Association of Canada
M&E	Monitoring and Evaluation
MC	Minerals Commission
MD	Mines Department
MDA	Ministries, Departments and Agencies
MDF	Minerals Development Fund
MEM	Ministry of Energy and Mines
MEST	Ministry of Environment, Science and Technology
MoFEP	Ministry of Finance and Economic Planning
MINCOM	Minerals Commission
MIS	Management Information System
MLF	Ministry of Lands and Forestry
MLFM	Ministry of Lands, Forestry and Mines
MLGRDE	Ministry of Local Government, Rural Development and Environment
MML	Minerals and Mining Law, 1986 (P.N.D.C.L. 153), as amended by Minerals and Mining (Amendment) Act, 1994 (Act 475).
MLF	Ministry of Lands and Forestry
MSDEP	Mining Sector Development and Environment Project (IDA Credit 2743-GH)
MSR	Mining Sector Rehabilitation
MSSP	Mining Sector Support Program
NDC	National Democratic Congress
NDF	Nordic Development Fund
NDPC	National Development Planning Commission
NPP	New Patriotic Party
NEAP	National Environmental Action Plan (of Ghana)
NGO	Non-governmental Organization
NIRP	National Institutional Reform Program
NOC	National Oversight Committee
NREG	Natural resources and Environmental Governance
NTRU	Non Tax Revenue Unit
OASL	Office of the Administrator of Stool Lands
OS&H	Occupational Safety and Health (matters, supervision, agencies, etc.)
P&PA	Planning and Policy Analysis division of MINCOM
PEA	Preliminary Environmental Assessment
PIT	Project Implementation Team
PMMC	Precious Minerals Marketing Corporation
PMU	Project Management Unit
PNDC	Provisional National Defence Council
PNP	People's National Party
PSMRP	Public Sector Management Reform Program
PURC	Public Utilities Regulatory Commission
PWSP	Prestea Water and Sanitation Project
SEA	Sectoral Environmental Assessment
SER	Sectoral Environmental Review
SGAB	Swedish Geological AB
SGU	Geological Survey of Sweden (Sveriges Geologiska Undersokning)
SSGML	Small-scale Gold Mining Law (P.N.D.C.L. 218)
SSM	Small Scale Mining/Miner
TC	Traditional Council
TOR	Terms of Reference
TRC	Technical Review Committee (at the EPA, for Environmental Impact Statements)
UNEP	United Nations Environmental Program
UNFCCC	United Nations Framework Convention on Climate Change
VC	Vice-President
VFC	Visual Flight Conditions
VFR	Visual Flight Rules
WB	World Bank

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Preface

The report was prepared by Gunilla Goransson (team leader) and Dr. Thomas Akabzaa, Geological Department of the University of Eastern Legon, Accra. They were hired by FCG to execute this evaluation and FCG provided support in this. The team has greatly benefited from suggestions and observations from Mr Poul Lassen, NDF.

The team would also like to express its gratitude to all those who have contributed to this: Minerals Commission, Geological Survey Department, other ministries and agencies, all those who participated so actively and enthusiastically in the stakeholder workshops in Prestea and Accra, and representatives from other donors. Input from the Nordic companies is also highly appreciated.

It should be noted that the findings and conclusions in this report are those of the evaluation team and are not necessarily those of NDF or any other individual with whom the team met.

Executive Summary

The Mining Sector Development and Environment Project, MSDEP was implemented by the Minerals Commission of Ghana with financial assistance from the Nordic Development Fund (NDF). The Credit Agreement was signed in September 1996 and it expired on 31 December 2005. The NDF Credit Agreement was a co-financing agreement with the Government of Ghana with the same objectives as the Mining Sector Development and Environment Project, financed by the World Bank. The World Bank components of the project were completed by 31 December 2001, while the NDF-components continued until 31 December 2005.

The overall project objectives were to support the sustainable development of Ghana's mining sector in an environmentally sound basis through strengthening the mining sector institutions and support to small scale miners to introduce the use of environmentally appropriate technology. The specific objectives of the MSDEP were i) to enhance capacity of mining sector institutions to carry out their function of encouraging and regulating investments in an environmentally sound manner; and ii) to support the use of techniques and mechanisms that will improve the productivity, financial viability and reduce environmental impact of small scale mining operations.

Several Nordic companies have benefited from this opportunity, including:

- Swedish Geological AB
- Geological Survey of Finland (GTK)
- Geological Survey of Denmark and Greenland (GEUS)
- Norconsult
- and some smaller companies, like VA-Ingenjoererna, D-Consult and others

Some of the companies maintain a presence in Ghana, for example Hifab Gruppen and GEUS.

The NDF financing was used to cover mainly the foreign exchange costs for works, airborne geophysical survey and international consultancy services. NDF financing primarily focused on four components:

1a. Planning, design and supervision of the development and rehabilitation of i) water supply, storm water and sanitation systems to cover the heavily polluted Prestea area and ii) advisory Services and studies related to rural planning and community relocation in Tarkwa; 1b. Implementation of rehabilitation works in the Prestea area.

2a. Implementation of an airborne Geophysical Survey of selected areas covering 48,000 square kilometres or more; 2b. Processing of data from the Airborne Geophysical Survey, including supply of equipment, setting up a processing unit in the geological Survey Department, and training of staff

3. Technical assistance in implementing the recommendations of the institutional study to be performed under the MSDEP

4. Technical assistance in implementing the recommendations of the institutional study regarding the Geological Survey Department performed under the MSDEP.

Nordic Development Fund has been providing strategic and very timely support to strengthen the mining sector in Ghana in critical areas. However, the evaluation found that some of the components were more successful than others. The geophysical survey and mapping component, and support to preparation of the Sector Environmental Report, appear to have been the most successful.

Prior to the implementation of the NDF-funded project, Swedish Geological AB was already present in Ghana and prepared the "Study of Mining Sector Institutional Arrangements". This study was financed by the World Bank and it became subsequently a catalyst for future endorsement by the Government of Ghana and attracted support by subsequent donor funded projects in the mining sector.

The selected NDF-components are of importance to the mining sector in general, and in particular, the Geological Survey Department (GSD) as well as the Minerals Commission (MC) has benefitted from the support.

A safe and regular supply of water is one most basic needs of a community. The pre-existing water supply in the mining compounds in particular was obsolete, insufficient and unsafe for consumption. The plan was to provide a safe and continuous supply of water, as well as improved sanitation. The Mineral Commission, as the implementing agency, supervised the design and construction of the water supply and sanitation infrastructure in Prestea and currently owns the infrastructure. Throughout the project implementation period, the Mineral Commission has attempted to find a sustainable arrangement of the operations and maintenance of the infrastructure systems, however, has not as yet found a sustainable solution.

There are currently several weaknesses with the system. The participants in the stakeholder workshop in Prestea had the following observations:

- The water is not potable due to high iron content and sedimentation – it cannot even be used for most other household needs, such as washing;
- The sanitation facilities are extremely dirty and not of type which is favoured by the public;
- There are 3 existing systems in Prestea, which are running in parallel – the Ghana Water Company (GWC), Golden Star mining company and some NGOs. This undermines any economies of scale and the financial sustainability of the system.
- The management skills of the so called Prestea Urban Water and Sanitation Board are also not adequate for managing the system sustainably.

In order to make some progress it is suggested an independent study should be undertaken to assess and make recommendations on the technical problem, including the feasibility of a consolidation of the different systems. Such study could also investigate the option of institutionalization of the system outside the Mineral Commission.

Under the NDF-project, the following contracts were executed by Nordic companies in order to support the Airborne Geophysical Survey:

- Geological Survey of Finland (GTK) provided support to map a total of 47,667 km² in the western, eastern and northern parts of Ghana
- Swedish Geological AB assisted in processing of data from the Geophysical Survey
- High-Sense Geophysics Limited implemented a contract for an Airborne Geophysical Survey in which a further 39,532 km² were mapped

The elaboration of the geophysical maps is highly relevant for the sustained and diversified growth of the mining sector. Although implementation appears to have progressed smoothly, access to recurrent budget counterpart funds in the State Budget was a continuous constraint. The scores on sustainability and replicability of the NDF-component are high as maps use "state of the art" technologies, which adhere to international standards. Based on the NDF-support, the EU's Mining Sector Support Program (MSSP) has followed suit and complemented the earlier work with additional mapping.

Swedish Geological AB (with international experience and specific knowledge of Ghana's mining sector) elaborated the 'Sectoral Environmental Review' in 2001. The study ranks high on all evaluation criteria – it is a strategic study for sustainable mining practices and environmental considerations. It contributes fully to the development objective (to support the sustainable development of Ghana's mining sector on an environmentally sound basis) and the efficiency has been high. The full impact of the study remains to be seen as changes due to the uptake of sustainable mining practices take time – the potential is very high.

The orderly sequence of strategic studies, building on studies already done and providing key information for future work, is a "best practice". Most of the recommendations have been adopted by the government and subsequent funded by the international community.

The NDF support to the Geological Survey Department may be rated as relevant and considerable training has taken place, particularly in the areas of geological and thematic

mapping. However, support was also addressed to restructure GSD to become an autonomous agency. This activity hasn't been completely successful and this may be classified as a missed opportunity. The support was not fully inserted into the Ghanaian institutional and political context. It is assessed that strategic positioning at higher levels and a better understanding of the on-going public sector reform process in Ghana would have been necessary in order for the GSD-restructuring to have been successful. In general, decisions on restructuring of the public sector institutions are taken at Presidential level and at the National Institutional Reform Program (NIRP) Secretariat. The World Bank specifically financed the Public Sector Management Reform Project (PSMRP) in order to support the public sector reform process in Ghana.

Despite substantial training and capacity strengthening of GSD, the restructuring has been limited to an internal reorganization. Currently the Head of the Civil Service is involved in updating the scheme of services provided by GSD with support from the Commonwealth Secretariat (eg. geological maps, mining inspections, etc). Therefore the anticipated greater autonomy, opportunity for revenue generation and a greater financial independence has not taken place. Geological Survey of Denmark and Greenland (GEUS) has provided follow up support through EC's MSSP, but the achievements have been limited and the future of GSD remains in question. Sustainability is highly doubtful given the limited budgetary allocation to be expected from the Government.

The Mineral Commission is a semi-autonomous institution with its own revenue flow from sale of licenses. This doesn't apply to the Geological Survey Department (GSD), which creates serious problems with receiving adequate resources for recurrent costs. The project component at GSD has incurred reported problems with fielding of staff, due to lateness or no appearance of recurrent costs for transport and daily allowances from the government. There are also problems with the upkeep, operations and maintenance of sophisticated and "state of the art" technology in an environment which has a chronic shortage of recurrent budget. This is a problem which will not be resolved by more capacity building and training in the institutions – it requires structural changes.

The Government-allocated funds for the renovation of the laboratory arrived many years after the equipment was procured and delivered. In the future it is recommended that decisions made on expectations of budgeting and actual disbursements from the Ministry of Finance and Economic Planning (MoFEP) and subsequent procurement of equipment, should be accompanied with an examination of implications on the Governmental State Budget and be more realistic.

Ghana has progressed substantially on the Extractive Industries Transparency Initiative (EITI) and has established a Mineral Development Fund (MDF) however this component has foundered partly due to the lack of recurrent budget. It is therefore recommended that future project co-funding agreements and arrangements with the Ministry of Finance and Economic Planning may be explored to earmark financing from mining sector revenues which now flow into the general state budget. In addition, General Budget Support (GBS) funds (including from Nordic donors) could perhaps be committed towards the increased need for recurrent costs that originate from project interventions. The new World Bank-funded project Natural Resources and Environmental Governance (NREG) is using a basket fund mechanism for the Ministry of Lands, Forestry and Mines (MLFM) which may also be explored as a new, more functional co-financing mechanism.

Regarding similar projects in the future, the following steps are recommended for strengthening implementation and management aspects:

- Consider establishment of a high level inter-ministerial steering committee to ensure good insertion in local political processes, cooperation with other institutions, and guidance of the intervention. In particular, institutional restructuring processes should not be undertaken without this high level support.
- This should include the application of Logical Framework Analysis (LFA), indicators and sources of verification and a suitable reporting format in order to report on project progress, highlight obstacles and suggested recommendations on way forward. The LFA

would be useful for project formulation, project monitoring and reporting/evaluation, both for the project staff and the NDF.

- As a means to improve the implementation, it is recommended to employ a representative for NDF or an assistant paid by NDF as part of the PMU in order to co-administrate project funds, project activities and to contribute to timely resolution of any problems or conflicts arising during implementation. Such a person may share his/her time between a few of NDF's projects in Ghana or on mining projects in different African countries.

Design of a training package for project management, containing – but not being limited to – the following elements:

- Assist with the institutional set up: strategic advice and capacity strengthening at the PMU; advice on the selection of a suitable steering committee with definition of responsibilities;
- Introduction and use of LFA, design of the LFA matrix with indicators and sources of verification, a pragmatic Management Information System (MIS) which underpins project progress reporting
- Project accounting – both the government and project loans budget and regular budget up dates. Any delays and/or obstacles with either funding resource should be clearly discussed, such that timely solutions may be found.

The co-financing mechanism between the NDF and the World Bank holds great potential for good results, with NDF finance used in areas that the WB cannot fund. However, a closer collaboration between the World Bank and NDF from start to finalization of activities will improve efficacy. Participation by NDF in the appraisal of the World Bank funded project is strongly encouraged. Jointly fielded evaluations will provide for stronger synergies and lessons learned to be shared between the two funding agencies. Joint supervision missions would further improve on project management issues and consistency and compatibility in the dialogue with government partners. Improved access by the NDF to project outputs, such as reports and studies would greatly improve on efficiency, as the NDF will build a better understanding of the project's strengths and weaknesses, and it would permit timely provision of additional support, and avoid repetition of studies and other efforts.

As most activities addressing sustainable mining and environmental management will have to be addressed at the local government level, it is recommended to consider more focus of finance and technical support to regional and district level in the future. This would improve sustainability. The District Assembly will have to address many issues related to mining, resettlement, provision of public services and environmental management in the future, but they don't currently have the knowledge or the instruments to tackle these issues.

It would be beneficial, as a means to maximise the usefulness of the already funded activities, for the findings from key reports (such as Swedish Geological AB: Study of Mining Sector Institutional Arrangements, December 1997 and the "Sector Environmental Report" from 2001) to be integrated with suitable geological mapping to increase the knowledge of sustainable mining issues at district level. This would be a useful exercise and could be developed and coordinated with the Ministry of Local Government, Rural Development and Environment (MLGRDE) and relevant donor funded projects, such as the GTZ Local Governance and Poverty Reduction Support Programme (LGPRSP).

The consultants also recommend that the potential funding mechanism through the Mineral Development Fund should be made visible and transparent at the local government level. The Sectoral Environmental Review (SER) provides advice on issues related to water quality (Fe, Ph, As, arsenic and other issues) – information which should be made known to the district level authorities. The SER has elaborated a range of recommendations on studies and measures – the active involvement of local government in such assessments will provide for recognition and "ownership" of problems and future collaboration in mitigation of problems.

Another general recommendation for the future – rather than focusing on high level scientific research the - focus more on how to address and assist the small and artisan miners to acquire mapping, knowledge and licences etc. It is suggested that a booklet in local languages

is published in order to provide information on geology, maps and the licensing procedure to the small and artisan miners. Without inclusion of the full range of stakeholders, the overall objective of environmentally sustainable mining industry will not be achieved.

1. Background

During the last decade the mining sector has evoked considerable interest – as commodity prices soared - for its potential to contribute towards economic growth and poverty alleviation. Generally, developing countries are facing a number of constraints to achieve a situation of 'sustainable mining' which provides such a basis including a contribution towards national economic growth and poverty alleviation. Some of these constraints are the following¹:

- Insufficient geological knowledge and mapping
- Low efficiency in the utilization of mineral resources
- Outdated and overlapping legislation
- Poor physical and working environment
- Varying degrees of corruption
- Weak negotiation power
- Lack of finance
- Poor administrative structures and institutions and coordination between them
- Lack of skills at all levels both in administration and industry
- Regional and local conflicts due to the struggle over mineral wealth
- Lack of capacity to exploit economic linkages between mining and other sectors
- Lack of development capacity, particularly at the sub-national level, that can enhance the contribution of mining to development

As a response to some of these challenges and constraints, the World Bank formulated and implemented two projects: the Mining Sector Rehabilitation Project (MSRP) (Credit 1921-GH) and the Mining Sector Development and Environment Project (MSDEP) IDA Credit 2743 at the Minerals Commission (MC). The second World Bank funded project started in 1995 and was concluded in 2001 and amounted to SDR 7,9 million.

The Nordic Development Fund (NDF) interfaced and co financed the MSDEP with a credit NDF 156 which followed suit in 1996 and was concluded in 2006. The total amount of this credit was SDR 4 million.

A number of important initiatives are developing at the global level, such as guidelines and principles which have been developed by institutions, such as the International Finance Corporation (IFC), International Council for Metals and Minerals (ICMM), Mining Association of Canada (MAC) and many others. An initiative which is gaining importance in the African countries is the Extractive Industries Transparency Initiative (EITI) which is a recent "best practice" that was launched by the British government at the World Summit in Johannesburg in 2002. Its first principle is:

"... belief that the prudent use of natural resource wealth should be an important engine for sustainable economic growth that contributes to sustainable development and poverty reduction, but if not managed properly, can create negative economic and social impacts"

This citation corresponds very well with the overall objective of the Swedish Mining for Development Initiative: to help; mineral rich developing countries all over the world to properly manage their natural resource wealth to create sustainable economic growth and promote the welfare of populations and do this with minimum negative environmental effects

Table 1: List of EITI Principles

- | |
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| <ol style="list-style-type: none"> 1. We share a belief that the prudent use of natural resource wealth should be an important engine for sustainable economic growth that contributes to sustainable development and poverty reduction, but if not managed properly, can create negative economic and social impacts. 2. We affirm that management of natural resource wealth for the benefit of a country's citizens is in the domain of sovereign governments to be exercised in the interests of their national development. 3. We recognize that the benefits of resource extraction occur as revenue streams over many years and |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

¹ Global Utmaning in cooperation with Raw Materials Group, draft report Mining for Development, 29th March 2009

can be highly price dependent.

4. We recognize that a public understanding of government revenues and expenditure over time could help public debate and inform choice of appropriate and realistic options for sustainable development.

5. We underline the importance of transparency by governments and companies in the extractive industries and the need to enhance public financial management and accountability.

6. We recognize that achievement of greater transparency must be set in the context of respect for contracts and laws.

7. We recognize the enhanced environment for domestic and foreign direct investment that financial transparency may bring.

8. We believe in the principle and practice of accountability by government to all citizens for the stewardship of revenue streams and public expenditure.

9. We are committed to encouraging high standards of transparency and accountability in public life, government operations and in business.

10. We believe that a broadly consistent and workable approach to the disclosure of payments and revenues is required, which is simple to undertake and to use.

11. We believe that payments' disclosure in a given country should involve all extractive industry companies operating in that country.

12. In seeking solutions, we believe that all stakeholders have important and relevant contributions to make – including governments and their agencies, extractive industry companies, service companies, multilateral organizations, financial organizations, investors and non-governmental organizations.

These principles provide a good background to several of the observations of this evaluation. The government of Ghana committed its participation in the EITI as early as 2003. The EITI steering committee is the governing body and consists of the following stakeholders:

- Ministry of Finance and Economic Planning (MoFEP)
- Ministry of Mines, Forestry and Economic Planning
- Minerals Commission (MC)
- Ghana Chamber of Mines (representing the mining companies)
- Office of the Administrator of Stool Lands
- Internal Revenue Service (IRS)
- Wasswa West District Assembly
- Civil Society Organizations (lead by Integrated Social Development Centre - ISODEC)

Ghana had its first Report on the Aggregation/Reconciliation of Mining Benefits in Ghana² elaborated for January-June 2004. This report elaborates on several recommendations in order to improve on the transparency of reporting and use of the financial benefits.

The following are the benefit streams/applications as well as the agencies responsible for receiving them on behalf of the government:

² Ministry of Finance and Economic Planning (Ghana Extractive Industries Transparency Initiative – GEITI), Report on The Aggregation/Reconciliation of Mining Benefits in Ghana January – June 2004; 1st Aggregated Report, February 2007, Publication funded by German Technical Corporation (GTZ)

Table 2: Analysis of benefits of the mining sector – financial streams and their application

Benefit/payment	Frequency of payment	Agency responsible for collection	Application of payment/benefit
Reconnaissance fees Prospecting fees Mining leases	When license is obtained When license is obtained When license is obtained	Minerals commission	Used internally by the Minerals Commission
Mineral royalties	Quarterly in arrears (within 30 days after the expiration of every quarter)	Internal Revenue Service (IRS)	Consolidated Fund (CF): 80% Office of the Administrator of Stool Lands (OASL): 1% District Assembly (DA): 4.95% Traditional Council (TC): 1.80% Stools: 2.25%
Corporate tax	Annually, if applicable	Internal Revenue Service (IRS)	Consolidated fund
Dividends/dividend tax	After company declaration	Non Tax Revenue Unit (NTRU)/IRS	Consolidated fund
Property rates	Annually	District assembly	Used internally by the District Assembly
Ground rent	Annually	OASL	OASL: 10.0% DA: 49.5% TC: 18.0% Stools: 22.5%

Source: Ministry of Finance and Economic Planning (Ghana Extractive Industries Transparency Initiative – GEITI), Report on The Aggregation/Reconciliation of Mining Benefits in Ghana January – June 2004; 1st Aggregated Report, February 2007, Publication funded by German Technical Corporation (GTZ)

In addition to these revenues, mining companies pay voluntary contributions as part of their Corporate Social Responsibilities (CSR). Golden Star in Prestea was undertaking substantial assistance to the communities in their vicinity. 1% per ounce of gold produced went into a special development fund and another 1% of gold production went into other community support.

2. Objective of Study

The main objective of the evaluation study is to learn lessons for future – this applies both to NDF as well as the Minerals Commission and other stakeholders.

3. Methodology of Study

The team undertaking the study consisted of Gunilla Goransson, team leader and Dr. Thomas Akabzaa, Geological Department of the University of Eastern Legon, Accra.

The team leader visited Helsinki Finland March 2-6th, 2009, where meetings were held with Nordic Development Fund (NDF), Geological Survey of Finland (GTK) and with FCG, which is the contracting company for this assignment. Subsequently, detailed planning and desk studying took place and the field work was begun.

The team leader started the field work with a visit to Stockholm on April 1 – 2, 2009 and met with Swedish Geological AB and SGU in Uppsala and subsequently visited Copenhagen on April 3, 2009 and met with Geological Survey of Denmark and Greenland (GEUS). The evaluation work in Ghana took place from April 24th to May 7th, 2009.

A key feature of the methodology was to organize stakeholder meetings, one in Prestea for the water supply and sanitation systems and another at Minerals Commission in Accra, where both public and private sectors were represented. This methodology will provide for observations by the users – or potential users – of the support.

- The stakeholder meeting in Prestea took place on May 1st, 2009; and
- The stakeholder meeting in Accra took place on May 7th, 2009.

The contributions were very useful and participants were very eager to express their opinions. As the stakeholder meeting in Accra took place the same day, i.e. May 7th 2009, when the team leader departed from Accra, this meeting served as a debriefing where most of the findings and issues were discussed.

The results from the workshops are summarized in Annex 4. The results from the stakeholders' workshops were forwarded to the implementing Nordic companies, and they were encouraged to provide their observations on the evaluation criteria in order to learn lessons from their perspective. Several emails containing the observations from the stakeholder workshops were sent out at the writing of the report however very few responses were received.

The team furthermore visited:

- **In Accra:** Minerals Commission, Geological Survey Department (GSD), including the laboratory, Environmental Engineers and ABP consultants, Ministry of Public Sector Reform (former), Ghana Water Corporation (GWC) and Community Water and Sanitation Agency; Golden Star Head Quarters mining company was also visited, as well as the NDF responsible officer at the Ministry of Finance and Economic Planning. Only Denmark of the Nordic countries has an embassy in Accra. The team leader spoke on the phone to the Charge d'Affaires and was informed that there were no relevant actions in the mining sector.
- **In Prestea:** Following persons were met with: members of the Prestea Urban Water Supply and Sanitation Board, the District Coordinator at the District Assembly in Boguaso, Urban Council in Prestea, Golden Star Mine. The team visited most of the water supply and sanitation systems and spoke to users of the systems.

The Consultants furthermore reviewed and used the Project Completion Report of NDF's funding as well as other documentation to be found in Annex 6.

NDF's support is not structured according to the commonly used Logical Framework (LFA), which means that there are no indicators or benchmarks with sources of verification. This also means that there is no structured monitoring or reporting system in place in order to provide a basis for monitoring or evaluation.

In order to assess the project components, the study team applied the customary evaluation criteria, i.e. Relevance, Efficacy, Efficiency, Impact, Sustainability and Replicability.

These were assessed with the following ranking:

- o Very good
- o Good
- o Neutral
- o Somewhat unsatisfactory
- o Unsatisfactory

The assessment of current and potential utilization of "best practices" and possible promotion of "best practices", as results from the project, were also studied.

Institutional Stakeholder Mapping was an important instrument during the evaluation work and during the stakeholder workshops. It addresses a number of issues at various level with relevance to 'sustainable mining' practices.

Table 3: Institutional Stakeholder Analysis (developed in Tanzania evaluation and partly adapted for Ghana)

Level	Contents
Global	UN agencies and international declarations, conventions and protocols with regards to sustainable development are listed here. In addition, global best practices and guidelines with reference to 'sustainable mining' are highlighted: the Extractive Industries Transparency Initiative (EITI), ICMM's Guidelines and Manuals, Global Mercury Programme etc. Above all the EITI initiative is important in Ghana.
Regional (Africa)	It is important to bear in mind best practices of agencies and regional agreements with respect to sustainable mining, including Botswana, Namibia, and South Africa for example. Such best practices include the Kimberly process and recent application of the EITI initiative.
National	All major agencies and institutions are mapped with donor funded projects (as identified in Ghana's state budget); specifically MEM's institutional set up is highlighted and NDF's intervention. Several key institutions and development strategies should be highlighted here, such as: Cabinet – Office of the President The World Bank funded Public Sector Management Reform Project (PSMRP) The National Institutional Reform Program Secretariat (NIRP) The "Public Sector Re-invention and Modernization Strategy for Ghana: Transforming Vision into Reality" (PUSERMOS) Office of the Administrator of Stool Lands (OASL) is important for the sustainable mining practices in Ghana
Regional	Regional – provincial - institutions are shown and a few examples of donor funded projects at this level
Zones	The Zonal Mining Office (ZMO) and the Residential Mining Offices (RMO) are demonstrated with the NDF support highlighted
Local government – district, towns, etc	One structure of a municipality is shown. This level of government is critical to sustainable mining operations
Stools, traditional authorities etc	In Ghana the local government level includes traditional authorities and traditional council, which have a role in using funds from the Consolidated Fund for sustainable mining practices
Village level	This is where the mines are physically located. Many mines address communication issues directly with the villagers. However, critical partnerships also need to be developed through the facilitation of governance experts (national, provincial and local) at the municipality, regional and national levels in order to address effectively sustainable mining operations.

Note. The large institutional linkages chart is not included in the report, as it is too comprehensive to download, but the hard copy was used throughout the evaluation in meetings and stakeholder workshops. This institutional map also facilitated an analysis and discussion of institutional roles and responsibilities, as well as a clearer definition of interface between the private and public sectors as well as possible synergies between the mining sector at central, provincial and local government levels and the private mining sector. It facilitated the strategic identification of the members of a steering committee, and also assisted in assessing various institutional arrangements and issues related to strategic project interventions and sustainability issues.

“Best practices” must always be interpreted within each specific country context. However, well used and applied international and regional (African) “best practices” can greatly contribute to avoid repeating mistakes made previously (which will be costly for the country), saving scarce funds in not reducing what has already been done and tested elsewhere and to capture the “optimum” solutions currently available.

Another example of a global initiative is the International Council on Metals and the Environment (ICME), in cooperation with UNEP, which is presently developing a Cyanide Management Code. It is the objective that signatories to this Code will undertake to follow the Code’s principles, implement its Standards of Practice and have their operations audited to verify compliance with the Code.

Subsequently, at the national level potential partners within the sector and outside the immediate mining sector institutions and agencies may be identified. This includes the Ministry of Public Sector Reform, Head of Civil Servants and several other donor funded projects, such as the very critical World Bank funded “Public Sector Management Reform Project” (MSRP) which would have provided critical synergies in a restructuring attempt of the GSD. Payment for retrenchment was financed by the Economic Reform and Support Operation (ERSO) credit.

4. Country Context

4.1 Mining in Ghana

Ghana has a population of about 22 million people, which is largely reliant on Agriculture and extractive resources including minerals. The last five years, the country has achieved between 6 and 7% growth rate/year. The mining sector accounts for about 5% of GDP, 12% of government revenue, 37% of total exports and 4% of the formal sector employment.

The country remains relatively highly indebted, despite significant debt forgiveness since 2001 when it accepted the Highly Indebted Poor Country (HIPC) status. Ghana’s external indebtedness still remains relatively high. Revenue shortfall remained huge and increasing over the last four years, as external debt rose from \$3,590 million (24.9 percent of GDP) in 2007 to \$3,982 million (28.1 percent of GDP) in 2008.

Ghana is a major producer of minerals of gold, diamonds, manganese, bauxite and salt for export. Limestone, clays and some industrial minerals are exploited predominantly for the local market while there are significant inventories of iron deposits. Considerable oil and gas discoveries have been made offshore and production is scheduled for 2010.

The mining sector is the leading recipient of total Foreign Direct Investment (FDI) in Ghana, accounting for over 60% of such inflows. Currently, gold is the most important mineral, accounting for more than 90% of the value of minerals, 80% of mining sector employment and over 95% of mining sector revenues. Following policy reforms in the mining sector two decades ago, the mining sector has witnessed phenomenal increase in output and export sales.

Major policy reforms in the mining sector in Ghana commenced in 1986 as part of the country’s Economic Recovery Programme (ERP) which began in 1983. The mining sector

reforms have been progressive and include both policy and institutional reforms. The major legislative reforms in the mining sector include the introduction of the first elaborate mining sector legislation, PNDCL 153, which was promulgated in 1986, legislation of the small scale mining sector in 1987 and liberalization of the mining sector. PNDCL 153 operated with some amendments and was finally replaced by a revised legislation, Minerals and Mining Act, Act 703, in 2006.

Institutional reforms included the establishment of the Minerals Commission (MC), Precious Minerals Marketing Corporation (PMMC), strengthening of the Mines Department (MD) and the Geological Survey Department (GSD) as well as the Environmental Protection Agency (EPA). The Commission has the mandate for the regulation and management of the utilization of the mineral resources of Ghana and the co-ordination of the policies in the sector.

Ghana's mining sector is now predominantly private owned. Major mining companies include AngloGold Ashanti, Goldfields (Ghana) Limited, Newmont (Ghana) Limited, Golden Star Resources, all active in the gold sector; Ghana Manganese Company (GMC) Limited is engaged in the production of manganese and Ghana Bauxite Company Limited in the production of bauxite. Goldfields (Ghana) limited and AngloGold Ashanti, collectively account for over 60% of Ghana's gold production. The small scale mining sector, including illegal artisanal mining, account for about 20% of total gold production.

4.2 Other donor-funded activities

The mining sector – and GSD specifically – has attracted support from several donors on a continuous basis and there are several synergies between NDF's funding and specifically the subsequent funding by European Commission (EC): Mining Sector Support Programme (MSSP), as well as from Germany.

Table 4: List of donor funded projects in the mining sector

Agency	Name of project	Amount (\$US)	Years
World Bank/EIB	Mining Sector Rehabilitation Project (MSRP) Cr. 1921-GH It was co financed by European Investment Bank (EIB)	SDR 29.3 million	1989-1996
World Bank/NDF	Mining sector development and environment project (MSDEP) Cr. 2743-GH It was co financed by Nordic Development Fund (NDF)	SDR 7.9 million	1995-2001 (World Bank) 1996-2006 (NDF)
Germany	Ghanaian-German Technical Co-operation Project (GGTCP) Ghanaian-German Mineral Prospecting Project (GGMPP) Geological Mapping Compilation of Ghana National Geological Map Environmental and Engineering Geology Project for Urban Planning in Greater Accra Metropolitan Area		
European Union	Mineral Sector Support Program (MSSP) This project supports: Mineral Commission GSD Mines Department PRRC Council for Geoscience of South Africa (CGS), BRGM, Geoman: Geological Mapping		2006-2008

Agency	Name of project	Amount (\$US)	Years
	Beak Consultants: Information Management System Geological Survey of Denmark and Greenland (GEUS): Airborne Geophysics – Quality Control Fugro, British Geological Survey (BGS): Airborne Geophysics GEUS: Technical Advisor to the Director of GSD		
World Bank	Natural Resources and Environmental Governance (NREG)	New project	2008-2012

As seen from the table above, several donors and their specific projects have contributed to strengthen the mining sector institutions. They are therefore mutually reinforcing each other and specifically the MSSP funded by EU has considerably strengthened activities started by NDF and provided a stronger basis of sustainability.

Despite the presence of other donors, this evaluation focuses on the NDF funded activities. However, the activities are identified and formulated within the World Bank project and they are interfacing with other on going projects. The subsequent EC funded project also addressed weaknesses or outstanding issues which needed more follow up.

4.3 World Bank and NDF-funded Mining Sector Development and Environment Project (MSDEP)

The components funded by NDF were conceptualized in the World Bank Mining Sector Development and Environment Project (MSDEP). MSDEP consisted of the following components and sub components:

Component 1: Strengthening of Mining Sector Institutions

- Sub Component 1.1: Minerals Commission
- Sub Component 1.2: Mines Department
- Sub Component 1.3: Geological Survey
- Sub Component 1.4: Ministry of Energy and Mines

Component 2: Assistance to Small-Scale Mining Enterprises

- Sub Component 2.1: Testing of Improved Equipment and Processing
- Sub Component 2.2: Dissemination of Equipment and Technology
- Sub Component 2.3: Improved Geological Information
- Sub Component 2.4: Improved SSM Sub-Sector Framework and Set Up
- Sub Component 2.5: Land Reclamation for Small-Scale Mining Degradation

Sub component 1.3: Geological Survey was subsequently one of the components funded by NDF. Its description is as follows³:

"This project sub-component is aimed at determining priority mining areas attractive for their subsequent promotion to potential investors in order to sustain further sectoral growth. This activity has been assigned a high priority because of a recent downturn in investment in exploration and mine development, which raises an urgent need to use more advanced geological technology to develop new geological information, for this purpose, the use of airborne geophysical survey technology has been selected mainly because of its low cost and ability to carry out rapid mapping of extensive areas. This will be used to identify target areas for exploration of gold and base metals.

³ World Bank: Staff Appraisal Report Mining Sector Development and Environment Project, May 19, 1995, page 25

Main elements include: (a) the compilation and interpretation of available geological information; (b) the definition of priority areas to be covered by the aerial survey; (c) the preparation of an action program with detailed survey specifications; (d) the selection of a survey contractor, and mobilization and execution of the survey; (e) the reinforcement of geophysical capability at GS, structuring these functions away from detailed mineral evaluation activities (which should be left to potential investors); (f) the processing and interpretation of survey data; and (g) the publication and dissemination of results and raw data. The IDA credit would finance the aerial survey, consultant services to assist GS, and training.”

It is also noteworthy to address sub component 2.3⁴, which is linked to sub component 1.3.

A program to make geological information available to small-scale miners, who now operate without any reliable information as to the location and extent of exploitable ore, would proceed simultaneously with the activities designed to improve SSM technology. The GS would organize teams consisting of a geologist, a technical officer and laborers to delineate areas with favorable geological prospects where SSM concessions can be granted, and to work with the small-scale miners in delineating recoverable mineralization after a concession has been obtained. General information of a preliminary nature would be made available to prospective applicants at no charge. After a license has been granted, the survey team would assist in delineating ore within the concession area for potential yield, size and depth, and in providing a map recording the results of the survey. A fee would be charged for this purpose to cover the out-of-pocket costs of the survey team (per diem, gasoline, assay test, etc.) in order to maintain the service on a sustainable basis.

During the first year of the project, two teams would be put into operation: one for regional mapping of prospective concession areas and one for working directly with small-scale miners on their concessions. If the operating results are favorable during the first year, two additional teams would be established to assist the small-scale miners. The information generated by producing these separate mapped areas would be subsequently integrated into an overall geological map of the area in order to provide more detailed and integrated information to serve as a basis for future work in the adjacent areas. The equipment, vehicles, and incremental operating costs necessary to operate the survey teams and integrate the results into a mineral resource map of the surveyed areas would be financed under the project.

A joint Geological Task Force would be established to oversee the geological assistance included in this component of the project. The Task Force would include members from the MC, the MD and the GS. The Task Force would provide guidance to the GS on areas to be surveyed, would review the Annual Work Program outlining the work of the teams, and would receive and review periodic progress reports on the work accomplished. It would also evaluate, along with IDA, the results of the first year's activities. A continuation of the survey work by the GS and an expansion from two to four teams would be predicated on the Task Force and IDA findings that the first year's results were satisfactory.

The NDF support to Ghana's mining sector started in 1995 when it stepped in to provide co-financing for specific projects under the Mining Sector Development and Environment Project (MSDEP). MSDEP was cooperation between the World Bank (WB) and the Government of Ghana (GOG) in Ghana's mining sector. The International Development Association (IDA) provided a credit (Credit 2743GH) of SDR 7,900,000 (US\$ 12.3 million), with GOG counterpart funding of (US\$ 1.4 million).

NDF co-financed the MSDEP. In September 1996, a credit (Credit NDF 156) agreement was signed between GOG and NDF providing the funds amounting to US\$ 5.5 million.

⁴ World Bank: Staff Appraisal Report Mining Sector Development and Environment Project, May 19, 1995, page 27

The envisaged duration of the MSDEP was initially planned for five years. However, it was extended to December 31, 2001 while the completion date for certain components financed by the NDF were extended to December 31, 2005.

4.4 NDF Planning and Implementation Context

4.4.1 Objectives

The NDF financing is related to four main components comprising:

Originally the intermediate objectives of the project were the following⁵:

- 1a. Planning, design and supervision of the development and rehabilitation of
 - water supply, storm water and sanitation systems to cover the heavily polluted Prestea area and
 - advisory Services and studies related to rural planning and community relocation in Tarkwa;
- 1b. Implementation of rehabilitation works in the Prestea area.

- 2a. Implementation of an airborne Geophysical Survey of selected areas covering 48,000 square kilometres or more;
- 2b. Processing of data from the Airborne Geophysical Survey, including supply of equipment and setting up processing unit in the geological Survey Department and training of staff

3. Technical assistance in implementing the recommendations of the institutional study to be performed under the MSDEP

4. Technical assistance in implementing the recommendations of the institutional study regarding the Geological Survey Department performed under the MSDEP.

The NDF financing was to cover mainly foreign exchange costs for works, airborne geophysical survey and international consultancy services to be procured in accordance with NDF procurement guidelines.

Several Nordic companies have benefited from this opportunity, including:

- Swedish Geological AB
- Geological Survey of Finland (GTK)
- Geological Survey of Denmark and Greenland (GEUS)
- Norconsult
- and some smaller companies, like VA-Ingenjoererna, D-Consult and others

Some of the companies maintain a presence in Ghana, for example Hifab Gruppen and GEUS.

⁵ NDF: Terms of Reference Ex-post evaluation

4.4.2 NDF Implementation Progress

Early in the implementation of the MSDEP Swedish Geological AB elaborated the “Study of Mining Sector Institutional Arrangements”, 1997 with a series of priorities, actions and studies. These priorities are listed below in Table 5 with the subsequent actions and status as of 2009.

Table 5: Recommended priorities in 1997 and actual status in 2009

Recommendations from Swedish Geological Final Report Study of Mining Sector Institutional Arrangements, 12.07	Actual situation in 2009	Observations and interpretation by consultants
1. Formulating a comprehensive strategic vision of the Ghanaian Government for the mining sector (addressing sustainability of mineral resources use, environmental concerns, and potential land use conflicts).	This has been partly done	The intention was, however, a more comprehensive and analytical policy
2. Establishing an effective regulatory environment for the mining sector by enacting: <ul style="list-style-type: none"> ◆ Regulations for obtaining, maintaining and terminating mineral rights ◆ Environmental regulations for exploration and mining ◆ Regulations for safety and health in mines ◆ Amendment to Small-scale Gold Mining Law (P.N.D.C.L. 218) 	There is a new Mining Act in 2006	World Bank: Natural Resources and Environmental Governance will be addressing following ⁶ : Elaborate more detailed regulations, on the range of issues covered by the Act, including administration of the royalty regime and health, safety, and environmental regulations. Assist with the policy in order to provide overall strategic directions in the sector over the short, medium and long term. This will provide an overarching framework for the Minerals and Mining Act, regulations and other policy decisions and activities in the mining sector including in relation to enhanced collaboration between relevant Ministries, Departments and Agencies (MDAs) to improve revenue collection.
3. An Act of Parliament, endorsing the need for establishing basic geological infrastructure in Ghana (i.e. geological maps, airborne geophysical maps, thematic maps and geological information system).	No Act of Parliament has been developed. Donors have assisted in accomplishing the geological mapping, airborne geophysical mapping, thematic mapping & Geological Information System (Germany, NDF and currently European Union)	
4. Establishing modern Cadastral System and centralized Mining Information System at the Minerals Commission.	This is being funded by EU: MSSP	

⁶ World Bank: Natural Resources and Environmental Governance, page 59

<p>5. Introducing Environmental Management Plans as legal requirements for all ongoing and future mining operations in Ghana.</p>	<p>This appears not to have been addressed</p>	<p>The Study on Institutional Arrangements: The Environmental Management Plan (EMP) should be introduced as legal requirement (through the Environmental Regulations for Exploration and Mining) to all ongoing and future mining operations in Ghana. The compliance with the EMP should be controlled by the Environmental Inspectorate of the MD</p>
<p>6. Establishing a suitable financial instrument to ensure rehabilitation of exploration and mining sites.</p>	<p>This has been achieved</p>	
<p>7. Establishing an Environmental Department at the Minerals Commission.</p>	<p>An Environmental Unit has been formed in the MC</p>	
<p>8. Reconstructing the Geological Survey into an autonomous institution within the MEM sphere with primary responsibility for providing basic geological infrastructure to the mining sector.</p>	<p>NDF has funded GEUS to undertake this. See further below under Component 4. This has not been achieved</p>	
<p>9. Restructuring the Mines Department into an autonomous agency within the MEM sphere with responsibility for supervision of safety & health in mines, supervision of site-specific environmental management & compliance enforcement of exploration & mining</p>	<p>This has not been achieved</p>	
<p>10. Preparation of a Sectoral Environmental Assessment.</p>	<p>This is being addressed by this component and funded by NDF. The Sector Environmental Review was elaborated in 2001.</p>	<p>EC-funded MSSP is providing continued and more in depth analysis with the: National Environment Impact Assessment over the Mining and Exploration Areas and Strategic Environmental Assessment (Project Nr 8 ACP GH 027). The objectives are as follows: To review existing information and to obtain new data from present, past and potential future mining sites, in order to identify the areas needing attention for immediate and future mitigation. (EIA component) To obtain information from areas affected by mining in order to evaluate existing policies, institutions, plans and programmes, followed by recommendations for the development of better policies (SEA component) The project covers all mining activities, including precious and other metals, diamonds, salt, quarries, sand winning operations, burrow pits, etc. it shall identify, describe and assess the effects of the mining activities on: Each component of the natural environment, including air,</p>

		<p>water quality and availability (surface and ground water), soil, flora and fauna, and the landscape; Sustainable resources for communities like fertile lands, woodlands and pastures; Social component like health and security, economy and livelihood, cultural issues, land use and general well-being. Implementing companies: Swedish Geological AB AY&Y Consult of Ghana Golder Associates of UK SGS Environment LTD of Ghana</p>
<p>11. Preparation of a preliminary assessment of the mineral potential of the Forest Reserves</p>	<p>Not achieved. However, the following has been elaborated: "Operational Guidelines for Mineral Exploration in Forest Reserves for Selected Companies" prepared jointly by the Ministry of Land & Forestry, Forestry Department, Minerals Commission and The Chamber of Mines in 1997. Ministry of Lands, Forestry and Mines: Environmental Guidelines for Mining in Production Forest Reserves, May 2001.</p>	<p>See Study on Institutional Arrangements, page 49. An assessment of the areas in which the forest is severely degraded. On the basis of the assessment, alternative uses of the Forest Reserves could be considered on the basis of facts, rather than general policies. It should be kept in mind that mining is only a temporary occupancy of lands, and the degraded Reserves could well be reforested in connection with reclamation, after a mine has ceased or an exploration program been completed.</p>
<p>12. Privatizing the Precious Minerals Marketing Corporation (PMMC).</p>	<p>This has not been achieved</p>	

NDF has entered very strategically in financing several of the priority issues listed above:

- # 3. By an Act of Parliament, endorsing the need for establishing basic geological infrastructure in Ghana (i.e. geological maps, airborne geophysical maps, thematic maps and geological information system).
- # 8. Reconstructing the Geological Survey into an autonomous institution within the MEM sphere with the primary responsibility for providing basic geological infrastructure to the mining sector.
- # 10. Preparation of a Sectoral Environmental Assessment.

The EC has also already assumed follow up on the SER with a comprehensive programme to address the National Environmental Impact Assessment and the Strategic Impact Assessment. Swedish Geological AB has been part of this project as well.

4.4.3 List of Contracts and Implementation Schedule

Fifteen contracts were subsequently financed by NDF funds, as seen below.

Table 6: List of NDF-financed contracts

Contracts	Status/comments	Value in SDR	Value in \$
Contract 1: Swedish Geological (Sweden):	Sectoral Environmental Review of the Mining Sector in Ghana: Elaboration of a Sectoral Environmental Review (SER)	121,720	152,834
Contract 2: Stig Georg Adolfsson	International expert on Safety and Health in Mines	37,611	47,225
Contract 3: Geological Survey of Denmark and Greenland (GEUS)	Adviser to the Director of the Geological Survey Department	279,856	351,392
Contract 4: Environmental Engineering Ltd	Prestea Water and Sanitation Project	678,182	851,538
Contract 5: NORCONSULT	Consultancy services for Planning, Design, Preparation of Procurement Documents and Supervision of an Expanded Water Supply and Improved Sanitation in Prestea, Ghana	442,634	555,780
Contract 6: High Sense Geophysics Limited	Airborne Geophysical Survey in Southern Ghana	105,488	132,452
Contract 7: Sambus Company Ltd	Training in GIS/GPS, Map Digitizing and Software Application	13,515	16,969
Contract 8: Geological Survey of Finland (GTK)	Appraisal study and draft project plan for the Geolaboratory or Geochemical Laboratory of the Geological Survey Department of Ghana	38,011	47,727
Contract 9: Geosoft Europe Ltd	Software for processing of geophysical data	13,606	17,083
Contract 10: VA Ingenjoererna	Review of Environmental Priorities – Prestea Water and Sanitation project, August 1999	12,063	15,465
Contract 11: Panason Ghana Ltd		18,603	23,358
Contract 12: ABC Hansen	Procurement of Chemical Laboratory equipment	206,231	258,947
Contract 13: Geological Survey of Finland (GTK)	Airborne geophysical survey and processing	1,217,348	1,528,526
Contract 14:	Processing of data from airborne geophysical	419,638	526,905

Contracts	Status/comments	Value in SDR	Value in \$
Geological Survey of Sweden	survey		
Contract 15: ICL Reiss & Co	PCs and accessories for processing of geophysical data	46,687	58,621
Total			4,584,822

Source: NDF, List of Contracts provided at briefing meeting in Helsinki

Note. Exchange rate:

1 SDR = 1.25562 USD

Although NDF reserves the right to administrate most of the funds directly from Helsinki, in this case USD 1,658,178 has been administrated by the Minerals Commission, mostly to pay for local services in connection with the Prestea Water and Sanitation System.

The mining sector has received comprehensive support during the last 10-15 years. All activities are interlinked and contribute towards addressing sustainable mining practices in Ghana.

Two World Bank projects have accompanied the mining sector reform process. Swedish Geological AB undertook the Study of Mining Sector Institutional Arrangements in 1997 with financing by the World Bank's second project Mining Sector development and Environment Project (MSDEP). The objective of the study was *to review and analyze the current institutional arrangements of the mining sector and to recommend such changes of the present structures that could form a basis for actions by the Government to implement the sector's strategy effectively, and in a socially and environmentally responsible manner*. This study has been a catalyst for the restructuring of governmental institutions and in the subsequent activities undertaken and financed by NDF and European Union.

Annex 2 "Planning and Implementation schedule NDF 156 MSDEP" shows the timing of the World Bank's, European Union's and NDF's interventions. It also shows how Scandinavian companies have got involved during the World Bank's financing, the number of interventions by various Scandinavian companies during the implementation of the NDF and how they have subsequently also been involved in the EU-funded project. The table also shows the planned activities of World Bank's new project "Natural Resources and Environmental Governance" which was implemented 2004-2009.

4.5 Institutional Context of the mining sector

Annex 3 shows the institutional arrangements in the mining industry in Ghana at the time of project conceptualization in 1997, and now in 2009. The following excerpt from MSDEP describes the roles and responsibilities of the key institutions.

Excerpt from the World Bank: Mining Sector Development and Environment project document, page 12.

The main Government agency dealing with the mining sector is the Ministry of Energy and Mines (MEM). The Mines Department, the Precious Minerals Marketing Corporation and the Geological Survey Department are the Ministry's main departments. MEM is also supported by the Minerals Commission, which is overseen by MEM but operates as an independent entity with its own operational budget. Brief descriptions of these institutions are provided below

The Minerals Commission (MC) was established primarily to help formulate Government policy with respect to "exploration for and exploitation of mineral resources" and to handle "all public agreements relating to minerals". Its principal function is to encourage the development of Ghana's mineral resources through attracting foreign investors, negotiating leases with them, and trying to bring the small-scale miners into legal channels through the establishment of PMMC buying offices and licensed traders. The MC is also the main sectoral agency responsible for ensuring that mining operations are carried out in an environmentally sustainable manner. To this end, they carry out priority studies on assessing environmental impact of both large- and small-scale mining and liaise as needed with the EPA.

The Mines Department (MD) has responsibility for inspecting Ghana's mines to ensure health and safety conditions and to enforce compliance with the licensing and leasing provisions of the Minerals and Mining Law of 1986. It is also responsible for environmental monitoring and enforcement, and is in the process of establishing a laboratory and field monitoring unit to ensure that Environmental Impact Assessments (EIAs) are implemented and that environmental standards are complied with.

In addition there are the **Geological Survey Department (GS)**, the **Precious Minerals Marketing Corporation (PMMC)** and the **Minerals Development Fund (MDF)**.

The **Environmental Protection Agency (EPA)** forms part of the institutional framework for the environment. The role of the EPA is to ensure that all developmental activities take account of environmental concerns through EIAs and also to ensure that there is regular monitoring of environmental quality. The EPA also has the mandate to develop and implement programs for both formal and non-formal environmental education.

The interventions of NDF, the autonomous Geological Survey of Tanzania as well as donor funded projects in the green box to the right.

The institutional contexts for the project components will vary, depending on the specific context of the components that is being addressed. In order to address sustainability issues and adequate institutionalization of activities it is important to correctly address and recognize the roles and responsibilities of relevant agencies and institutions.

Table 7: Relevant Institutions for the Water Supply and Sanitation Component

Name of agency/institution	Water and Sanitation sector issues	Roles and responsibilities with respect to Water supply and Sanitation	Role assigned in documents	Observations
Ministry of Land, Mines and Forestry – Now Ministry of Natural Resources	The Community Water and Sanitation Division was founded as a semi-autonomous division of GWSC in 1994. Subsequently, it changed its name to the Community Water and Sanitation Agency (CWSA) and became fully independent. In 1999, the GWSC was replaced by the publicly owned GWCL. At the same time, the responsibility for rural water supply and sanitation was decentralized to the District Assemblies. In addition, sanitation was separated from water supply and became a responsibility of the District Assemblies in urban and rural areas.		None – only to Mineral Commission	
Minerals Commission		Generally, none	Project implementer	Does Mineral Commission's mandate include ownership and operations of water supply and sanitation projects?
Ministry of Local Government, Rural Development and Environment, as well as any donor funded projects working with the decentralization process and multi sectoral planning at the district and local government levels	As a result, the GWCL remained responsible only for urban water supply, whereas more than 110 small towns' water systems were transferred to District Assemblies, which receive support from the CWSA. In terms of sanitation, District Assemblies are responsible in urban and rural areas.	A water and sanitation project in Prestea would normally have been part of the local government planning process. See for example GTZ Local Governance and Poverty Reduction support Programme (LGPRSP) Ministry of Local Government, Rural Development and Environment	VA-Ingenjoererna AB: Prestea Water and Sanitation Project: Review of Environmental Priorities, august 1999 recognizes the need to coordinate with on going projects, such as the Austrian funded; Water Sector Rehabilitation Project Area B Rehabilitation of Water supply Systems and assigns responsibilities Norconsult: None	For sustainability and cost efficient coordination and collaboration, coordination and integration into the local government planning process would be positive
District Assembly, Prestea and Honey Valley		The District Assembly is the highest government authority in the district and has a critical role in the provision of potable water and sanitation to the population; potential use of funding from the Mining Development Fund.	VA-Ingenjoerna AB: Prestea Water and Sanitation Project: Review of Environmental Priorities, august 1999 assigns responsibilities Norconsult: None	As above
Urban Council of Prestea	The Public Utilities Regulatory Commission (PURC) is the regulator.	The Urban Council is a subsidiary to the District Assembly and also has a responsibility concerning water and sanitation	Initially none	As above
Prestea Urban Water and Sanitation Board	In October 2006, under the framework of the Urban Water Project (see below) a five-year management contract was signed between the GWCL and AVRL. The main objectives of this private	The board consists of "interested and concerned" persons from Prestea. The Board states that it has "taken over" the operations and maintenance from the urban	none	It is difficult to understand the anarchy that characterizes the transition of operations: "take over" by the Urban council from the contractor Environmental

Name of agency/institution	Water and Sanitation sector issues	Roles and responsibilities with respect to Water supply and Sanitation	Role assigned in documents	Observations
	sector participation are: <ul style="list-style-type: none"> • Extending reliable water supply especially to low-income areas 	council		Engineers and in 2008 “take over” by the Prestea Urban Water and Sanitation Board from the Urban Council.
Golden Star mining company in Prestea	<ul style="list-style-type: none"> • Making potable water affordable for low-income consumers • Increasing cost recovery • Ensuring investments based on low-cost and concession financing • Supporting further involvement of the private sector 	Golden Star is owning and operating a water supply and sanitation scheme for mining workers in Prestea	VA-Ingenjoererna AB: Prestea Water and Sanitation Project: Review of Environmental Priorities, august 1999 assigns responsibilities and recommends an integration of the systems	For future sustainability and cost efficiency one larger system is better than two or three isolated systems. Particularly, in the situation where the mine operations may come to a close, it will be positive to integrate the system with GWC and the NDF funded project
Ghana Water Company Ltd, Takoradi	<ul style="list-style-type: none"> • Reducing non-revenue water • Increasing water treatment <p>The project is financed by the World Bank, the Nordic Development Fund and the Republic of Ghana</p>		VA-Ingenjoererna AB: Prestea Water and Sanitation Project: Review of Environmental Priorities, august 1999 assigns responsibilities Norconsult: some GWC was eventually only involved on an ad hoc basis as a consultant and commentator to reports and issues	GWC already operates successfully a system in Prestea. It employs a private operator for day to day activities.
Community Water Department, Takoradi			None. Community Water Department was involved on an ad hoc basis as a consultant and commentator to reports and issues	
Colan Consultants		They undertook training of the urban council in general – but not specific – training of water supply and sanitation schemes	None. There is no user friendly Operations and Maintenance Manual for the systems	
Population of Prestea				Not addressed

The analysis above shows the relevant stakeholders in the water supply and sanitation sector. It also shows some of those agencies which were not adequately taken into consideration at the design and implementation, and subsequently after commissioning, by the project.

With reference to Geological Survey Department (GSD) and specifically with reference to a process of institutional restructuring, several high level agencies and institutions are relevant and important for achieving sustainable change. The specific governmental restructuring

is vested in the public sector reform process which is funded by the World Bank and which is the mandate of the Ministry of Public Sector Reform.

Table 8: Relevant Institutions for the Restructuring of GSD

Name of agency/institution	Roles/responsibilities	Agency's role mentioned and defined in the Study of Mining Sector Institutional Arrangements, 1997	Observations
Parliament	Parliament will have to approve any legislation or regulation which would affect the GSD	Not mentioned	
Geological Survey Department (GSD)		No mention	
Ministry of Land and Natural Resources (previously Ministry of Energy and Mines, Ministry of Land, Forest and Mines)	Ministerial set up varies dramatically over time, depending on political party in power. During 1982-2001 the Ministry of Energy and Mines managed the mining sector. In 2002 the Ministry of Energy separated from the Ministry of Mines. From 2003-8 mining was incorporated into the Ministry of Lands, Forestry and Mines. And as of 2009 the ministry was re-named to be the Ministry of Lands and Natural Resources.		The changes in political party and consequent changes in the governmental set up causes serious discontinuity of institutional restructuring processes
The EITI initiative & the modalities of the revenues and application of revenues in the mining sector; the Mineral Development Fund's potential for financing.		EITI taken into consideration as not in existence in 1997. Other options not mentioned.	
Office of the President		Not mentioned	
Public Sector Reform Project – basket funding from many donors	The Public Sector Management Reform Project (PSMRP) was funded by World Bank and implemented between 1999 and 2003.	The document sets the government's agenda for the public sector reform. In addition, the process is supported by this World Bank funded project. It spells out in details the steps to be taken for a restructuring of an institution.	A restructuring process of an institution needs to be accompanied by a comprehensive set of support generally found in World Bank funded public sector reform projects. In developing countries synergies with such projects are critical for any institutional changes.
Ministry of Public Sector Reform	The objective of the project: (i) redefining the role and functions of the state; (ii) designing appropriate institutions and systems to implement this role; (iii) rationalizing the existing structure and systems to meet the new design. In 1994 the Government of Ghana (GOG) had created the National Institutional Reform Program Secretariat (NIRP) as a focal point for public sector reform. In its "Ghana: Vision 2020" (1995) document the GOG had recognized the need for an efficient public sector as a pre-requisite for sustained growth. In 1997 the Government came	Specifically Component IV addressed the management of the change process and to assist the NIRP Secretariat to build support for the reforms.	

Name of agency/institution	Roles/responsibilities	Agency's role mentioned and defined in the Study of Mining Sector Institutional Arrangements, 1997	Observations
	<p>out with its "Public Sector Re-invention and Modernization Strategy for Ghana: Transforming Vision into Reality" (PUSERMOS) where it committed to a review of the mandate, approach and scope of activities of public sector institutions. Although the history of GOG's efforts at public sector reform up to the time was limited, PUSERMOS and the subsequent appointment of the Vice-President (VC) as the Chairman of the National Oversight Committee (NOC) to oversee all public sector reform were seen as credible signals of GOG commitment to reform. The program was consistent with the Bank's CAS for Ghana in that it aimed to improve overall fiscal performance through comprehensive reform of structures, organizations, systems and processes in Ghana's public sector. The CAS had noted that the Government's development agenda identified public service reform (better capacity, efficiency, and a sustainable wage bull) as essential for fiscal stability, higher private investment and better service delivery⁷.</p>	<p>This is not mentioned in the project documentation, although this is a critical element to any restructuring. No linkages are defined into this process which would have greatly contributed towards possible success of the project.</p>	
Ministry of Justice		Not mentioned	
Ministry of Finance and Economic Planning/Mineral Development Fund/EITI initiative		Not mentioned	
Office of the Head of Civil Servants Management Services Department	Even an internal reorganization needs to be done in unison with the Head of Civil Servants		
A liaison with the EITI & the Mineral Development Fund in order to access funding		EITI not existing at this time	

All of the agencies and institutions above have a role to play and would be considered for representation in a high level steering committee in order to coordinate and carry forward a restructuring process.

⁷ World Bank: Public Sector Management Reform Project (PSMRP), page 2: the following expected benefits justified the project: (i) An efficient public sector providing more and better services to its customers; (ii) Significantly reduced public sector expenditures focusing on core government functions; (iii) improved financial management; (iv) enhanced private and public sector collaboration, with increased private sector input to government decision-making and operations; (v) motivated public servants to receive remuneration and incentives according to their performance; (vi) better coordination of the different donor activities targeting the public sector; and (vii) significantly reduced corruption in Ghana's public service by improving the accountability of public servants. The project provided funding for the development of specific action plans for the restructuring as well as assistance to the subventioned agencies to restructure their operations. This included the development of a modernization plan for the targeted institution with a medium-term financing plan identifying capital investment needs to further streamline the operations of the agency. Project funds were to be made available for technical assistance and retraining costs for approximately 1200 public servants.

4.6 Mining Sector and Environmental Management/Climate change issues

The mining sector is a considerable greenhouse gas (GHG) emitter due to the heavy demands of transportation, diesel production of energy, and considerable needs for ventilation, as many mining operations are not generally connected to the national grid. Climate change issues have not been incorporated in the current NDF funded studies and/or actions, although this is a future area for support. It is anticipated that the new World Bank-funded project Natural Resources and Environmental Governance (NREG) will elaborate a strategy on climate change for the sector⁸.

Table 9: Climate Change issue to be addressed by World Bank NREG

Expected outcome:

It is expected that by the end of the first Development Policy Operation (DPO) series that sustainable sectoral and district policies incorporating social dimensions, will be implemented and reflected in the next revision of Ghana Poverty Reduction Strategy (GPRS), that climate change adaptation and mitigation measures will be adopted by all relevant MDAs at different levels and National Development Planning Commission (NDPC), and that these measures will be reflected in Ghana's international engagement with United Nations Framework Convention on Climate Change (UNFCCC) processes.

4.7 Project Implementation

4.7.1 Management Model

It should be noted that the institutional context has changed very much since the conceptualization of the project in 1997. This is captured in two organization charts:

- Chart 1: Government context in 1997
- Chart 2: current government context in 2009

The current governmental institutional setup is found in Table 8 and Annex 3. The Mineral Commission acted as coordinator with the Ministry of Lands, Forestry and Mines, the Geological Survey Department, the Inspectorate Division of the Mineral Commission (Mines Department), in the roles of participating agencies. The MC liaised with the Environmental Protection Agency (EPA). So called "consultative meetings" were held initially monthly and subsequently quarterly. A Procurement Committee oversaw all procurement. The procurement process of goods and services of the Prestea Water and Sanitation Project (PWSP) was carried out by the "procurement structure of the Mineral Commission"⁹.

The MSDEP management structure included the MC as the coordinating agency, with MEM, Geological Survey Department and the Mines Department as participating agencies. MC would liaise closely with EPA in regard to the environmental components of the project, including the setting up of the minerals environmental information system and the land reclamation component. A project coordinator was appointed, along with liaison officers from the participating organisations.

Most financial resources of the NDF are controlled from Finland, which has ensured timely and good governance of resources.

4.7.2 Supervision and Monitoring Logframe, MIS – monitoring, baseline, indicators, progress reports, audits

Progress reporting was coordinated by the Mineral Commission (MC) and reportedly undertaken ad hoc when needed. When writing this report, the evaluators have not had access to progress reports.

⁸ World Bank: Natural Resources and Environmental Governance, 2008, page 63

⁹ Republic of Ghana, Ministry of Lands, Forestry and Mines, Minerals Commission: NDF Credit 156: Borrowers Completion Report under the Mining Sector Development and Environment Project Cr 2743 GH

Logical Framework Analysis (LFA) as a formulation, monitoring and supervision tool is not known or used by the project. Progress reporting is therefore not structured in a way that indicators/benchmarks are easily identified. Normally a baseline is used for defining the situation "before" the project and providing a tool for assessing the situation "during" or "after" the project. There is no such baseline study in place. The consolidated reports therefore do not contain progress with reference to benchmarks and indicators, and there is no reporting on critical issues and obstacles to the project implementation, nor recommendations on timely solutions.

There is no high level steering committee providing oversight and timely assistance on issues which have to be addressed outside the mining sector. Each component on this NDF project requires liaison and coordination with a different group of institutions and agencies. In the absence of a steering committee and with a relatively weak institutional set up at the PMU there is basically no mechanism for quick problem resolution or conflict negotiation when problems appear. There appears to not be any effective mechanism in place for NDF to monitor activities of the project satisfactorily.

5. Component 1: Prestea Expanded Water Supply and Sanitation

5.1 Description and Objective

The initial objective of this component was as follows:¹⁰

- 1a. Planning, design and supervision of the development and rehabilitation of
 - water supply, storm water and sanitation systems to cover the heavily polluted Prestea area and
 - advisory Services and studies related to rural planning and community relocation in Tarkwa;
- 1b. Implementation of rehabilitation works in the Prestea area.

This has since shrunk to only address the extension of the water supply and sanitation systems in Prestea.

5.2 Planning and Implementation

The World Bank Appraisal document left some of the NDF components quite unclear. In order to contribute towards a more focused intervention and identification mission the following studies assisted in the process:

- D-Consult: Final Report NDF Financing of Components related to the Ghana/IDA Mining Sector Development and Environmental Project and Mining Sector Rehabilitation Project, May 1996;
- VA-Ingenjoererna AB: Prestea Water and Sanitation Project: Review of Environmental Priorities, august 1999

Three years elapsed between these two studies. Although a water and sanitation project is not optimally suited for NDF financing, as the greater part of the funding requirements are destined for local implementers, the Prestea Water and Sanitation project was selected for funding by NDF.

The constructed water supply and sanitation project is located within the boundaries of the town of Prestea and within the district of Prestea and Honey Valley. At the time of conceptualization of the system there were already 2 systems within the boundaries of Prestea: Ghana Water Company Ltd and the Golden Star system. Ghana Water Company has a regional office in Takoradi, and so does Community Water and Sanitation Department. At the

¹⁰ NDF: Terms of Reference of Ex post evaluation study, 2009

time of the formulation study by D-Consult¹¹ in 1996 the following on-going activities and institutional presence is noted with respect to the Prestea area:

The Ghana Water and Sewerage Corporation (GWSC) is at present implementing a Water Sector Rehabilitation Project, Area B: Rehabilitation of Water Supply Systems in the Central/Western Regions of Ghana. The project is financed by the Austrian Government, and involves construction, supply and installation of equipment for rehabilitation of water supply systems in seven villages/cities, including Prestea and Dunkwa. For Prestea the project includes establishing 4 boreholes, pumps and water tanks in the Prestea village only (estimated population 10,000). According to GWSC there are at present no other projects or support under consideration involving water supply in the Prestea area.

This second study by VA-Ingenjoererna AB clearly lays down some of the justification and the guidelines for the systems in order to avoid duplication and in order to institutionalize the systems optimally as follows

Table 10: Guidelines on the PWSP by VA-Ingenjoererna

Water Supply

A safe and regular supply of water is one most basic needs of a community. The current water supply in the mining compounds in particular is obsolete, insufficient and unsafe for consumption.

The Prestea communal water services provided by Ghana Water and Sewerage Corporation (GWSC) have a potential to be expanded to cover the mining compounds in Prestea. This would reveal the Prestea Gold Resources from managing a water supply service at the same time as it would give GWSC a larger consumer and thus economical platform for the services. **There is an economy of scale, i.e. one common water supply in an area is more cost-effective than two in any one area.**

GWSC will within the next year be transformed into Ghana Water Company. In future they will lease the water supplies to specialized water services companies, in the same manner as developed in several other parts of the world. This private sector participation will then result in that the water services in Prestea township will be operated on a private basis.

For the compounds in Prestea, the **GWSC supply system is proposed to be expanded to enable a continuous supply of safe water to the mining community. This should also encompass a review of the need for expansion of the sources with an additional well, alternatively rehabilitation and incorporation of the two mining wells into the system.** All surface supply should be abandoned. The GWSC system should be reviewed for any additional efforts that may be required to ensure the sustainability of the system. In particular, the raw water and treatment of the water from W 14 should be assessed and if so required, additional treatment added, as this borehole is understood to be a potential key element in a combined communal and mines compound system. Sufficient pumping capacity and pipe network rehabilitation and expansion will also be required together with some additional storage capacity.

With a population of about 14000 in Prestea township and mining compounds and a population growth rate of 3% the population to be served by the year 2015 in Prestea township and mining compounds would be in the region of 22000. With a per capita consumption of 60 litres per day, the consumption would be 1320 m³ per day. Allowing for 50% losses and un-accounted for water, the average production would have to be about 2000 m³ per day. The four GWSC wells have an installed capacity of 1480 m³/day. Assume that the two existing wells in the mining system can be successfully rehabilitated with a safe yield of some 300 m³ per well and day, the combined use of the six wells would be sufficient for the system, provided that capacity in the system reservoirs provides for the peak consumption. **Disinfection and most probably iron removal facilities will be required for the water supplied from the rehabilitated wells.** This should be contained in one unit for both wells. The potential in use of parts of existing pipes and storage faculties should be investigated, in combination with rehabilitation and extension.

Ghana Water Co Ltd propose a focus on increased treatment capacity with doubling of the iron removal capacity and change to high capacity pumps on an understanding that the yield of the aquifer allows for such an increase in production. The potential in this proposal should be explored.

The Bondaye compound and adjacent village of Sedumasi should be provided with a new water supply based on two boreholes to be sited, drilled and equipped. **Most likely iron removal facilities will be**

¹¹ NDF-financing of Components related to the Ghana/IDA Mining Sector Development and Environmental Project and Mining Sector Rehabilitation Project, May 1996

required in addition to disinfection. The system should include for a distribution system, storage and standpipes. The possibility to utilize some of the existing pipe distribution and storage facilities should be explored. The senior staff housing with internal plumbing should be connected.

Rehabilitation and improvement to the Ankobra spring should be investigated, and if found viable the supply system to the compound should be reinstated.

Sanitation

A piped sewerage system in combination with one central or several small sewage treatment plants appears not to be a viable option. In Ghana, only parts of the metropolitan Accra have piped sewer systems and sewage treatment plants. Large regional cities as well as smaller towns and communities have open drains as a normal disposal of storm water, washing and kitchen waste water. Privies or occasionally, water toilets connected to septic tanks are the normal standard of sanitation.

In Prestea with the limited water distribution, lack of internal plumbing and with the general level of development, a piped sewerage system and sewage treatment facilities would not be appropriate in a short to medium term development, it is envisaged that given the limited financial resources available in terms of investment and low income level to sustain operation and maintenance, other methods of improvement of the sanitary situation has to be developed.

In recent years, much attention has been drawn to the development of low cost dry sanitation facilities for low income urban areas. Alternative low cost human waste disposal systems are being put in use with on-site decomposition in anaerobic or aerobic conditions, reducing the waste in a biological breakdown only requiring infrequent removals of decomposed matters. Such facilities should naturally be equipped with a water supply for users washing of hands and for cleaning of the privy.

A programme of replacement of the existing public toilets and vaults should be developed, commencing a location with the worst sanitary condition (C-compound). **For the mining compound, this should be pursued with the mining company while the privies in the township should be planned and implemented through, or in co-ordination with, the District Assembly.**

The proposal is in line with the recommendation by Ghana Water Co Ltd. They recommend on site disposal systems and demolition of the existing dilapidated public toilets.

4.4 Storm Water

There is a need for cleaning, improvements and expansions of the drainage channels in the lower parts of the central Prestea. However, in view of the limitations in funding in combination of priority to water supply and sanitation (toilets), the storm water is proposed not to be given priority in the NDF financed project. It is envisaged that this could be a part of the community development programme within "Urban 5".

4.5 Solid Waste

Solid waste collection and disposal is required to be organized and managed for all mining compounds, Prestea township and the villages. Given the intention expressed by the District Assembly to develop a controlled landfill site in future as a part of the "Urban 5" program, the whole issue of collection and disposal is proposed to be left out of the NDF financed project.

4.6 Conclusions of Priorities for the NDF Financed Water and Sanitation Project

Priority is proposed to be given to water supply and sanitation (public toilets). The funds available are proposed to be utilized in the following order of descending order of priority:

a). The GWSC water supply in Prestea, being in a final stage of rehabilitation works, is proposed to be further expanded to also encompass the mining compounds and the hospital. The main components includes for complementary actions within the present GWSC supply system, rehabilitation and refurbishing of the two mining boreholes and a common disinfection and iron removal facility with pumping and connection to the overall system. Also inter-linking supply lines, rehabilitation and/or replacement of existing mining pipe distribution network, rehabilitation of reservoirs and additional storage capacity. All surface sources connected to the system should be disconnected.

b). A new water supply for Bondaye compounds, also with supply to the adjacent village of Sedumasi, based on new boreholes should be developed. The system is proposed to consist of two new boreholes with one common disinfection and iron removal works, reservoir and distribution system connecting to existing and new storage tanks. Existing tanks and distribution are probably to some extent possible to

utilize in the system after rehabilitation.

c). Improved spring protection and reinstatement of pump and water supply to Ankobra compound.

d). Development of hygienic public toilets (privies) in combination with one site decomposition reducing the waste in a biological breakdown with minimum intervals of emptying. Priority to be given to the locations that are most polluted and worst sanitary conditions to such an extent that the financing permits. The toilets and vaults replaced should be demolished as a part of the project. Based on a total cost for water supply above of 730 000 USD, an amount of USD 270 000 is potentially available for public toilets. The mining compounds of Prestea, Bondaye and Ankobra have a total of 21 public toilets. The mining compounds of Prestea, Bondaye and Ankobra have a total of 21 public toilets while Prestea township has up to 9 units. The new toilets and tanks could cost about USD 20 000 per unit. It could then be assumed that some 10 to 15 new public toilet facilities could be included in the project. (One such toilet is envisaged to have a capacity of 15 to 20 visitors at any given time with a possibility to serve up to 500 people).

The total investment cost per user would according to the above be 95 USD per person for water and 40 USD for toilet facilities. (The cost of water calculated on the present population on the mining compounds and Sedumasi). By comparison, a mine worker is receiving a gross salary of 120 USD per month, USD 100 after tax.

The water supply and sanitation project was not identified in the World Bank: Mining Sector Development and Environment Project (MSDEP), but instead identified through a series of studies financed by NDF. The World Bank fielded Project Performance Assessment Report from 1st of July 2003 is very critical to the formulation and appraisal of the World Bank funded project document and doesn't even mention the Prestea Water and Sanitation Project (PWSP). Through a series of discussions and studies, the water supply and sanitation project was finally identified even though it is not the "typical" type of project suitable for NDF funding, as the execution of the works largely require local consultants and local contractors.

The implementation and construction was done by Norconsult, with Niras from Denmark, Haskoning, Finland and ABP from Ghana. The contractor was Environmental Engineers, Ghana. The Executing agency was the Minerals Commission. Ad hoc liaison was made with Community Water Department and Ghana Water Company Ltd. during design and construction.

The Minerals Commission: Borrowers' Completion report states great satisfaction with the project and confirms that the following was delivered:

- About 14 km network of transmission and distribution lines
- Three elevated tanks (Braithwaite) of capacity 200 m³, 100m³ and 20m³, situated at Bondaye (100m³), Dagati (200 m³) and Ankobra (20m³)
- A total of 9 Poly Elected tanks to store water for toilet facilities located at Bondaye, Abrogari, Alpha Shaft, Compound D, Hospital an Alpha Shaft
- 4 new Aqua Privy Toilets located at Bondaye, Nakoba, Ekotsewa, Hospital
- 4 pit toilets converted to Aqua Privies (self flushing or squat-flush) located at Anfargya, Mempeasem, Bolaakykl and Alpha Shaft (Low cost)
- 4 rehabilitated toilets to either self flushing or squat flush types at Bondaye, Dagati, Cemetery Road and Ankobra

Furthermore, the report states:

The mining compounds of Prestea which were supplied with raw untreated water from a nearby stream now enjoy potable water supplied from two high yielding boreholes into three elected high quality Braithwaite tanks for supply of water to the communities

Also, the disposal of human waste into open drains in the townships has virtually been eliminated with the provision of modern aqua privy toilets located at strategic places throughout the community

5.3 Evaluation

As seen from the Annex 4 Stakeholder Seminars, which were held at Prestea and in the Minerals Commission in Accra, there are a number of short comings in the system and the feedback contradicts the Mineral Commission's glowing completion report. Some practical end-user problems are:

- Water is not potable as it contains considerable amount of sediment and iron – the users buy potable water from Ghana Water Company's system and/or from vendors
- It cannot be used for washing clothes either as it stains
- The latrines are very dirty and not the type preferred by the users
- There have been no awareness campaigns on health and sanitation issues

There are several technical problems mentioned:

- no filters were installed in the construction to reduce sedimentation
- no actions were taken to reduce and eliminate the iron content despite the fact that the high iron content was noted in Norconsult: Report on Additional Raw Water Sources and already highlighted in the report by VA-Ingenjoererna: Prestea Water and Sanitation Project: Review of Environmental Priorities, August 1999
- there is no disinfectant device
- most latrines do not have either water tank or pipes or water basins for hand washing
- the number of aqua privies don't seem to have been delivered
- 2 aqua privies and latrines were installed at the hospital – reportedly nobody goes there, as it is located close to the mortuary and there are ghosts in the area
- there is no user-friendly operations and maintenance manual

At the design of the NDF-funded system there were 2 existing systems in Prestea: The Ghana Water Company and the Gold Star Mining Company both operate systems in Prestea and they are both mentioned in Norconsult's study. Clear recommendations from the VA-Ingenjoererna's study were an extension and consolidation of existing systems, but there are no real linkages, nor a search for synergies between the constructed system and the existing systems. There is no study of options for the NDF-funded system in order to find a least-cost investment alternative, such as:

- Option 1: without the project
- Option 2: with the project:
 - Alternative 1: extension of GWC's and Gold Star's existing systems and a consolidation of these with the NDF system
 - Alternative 2: create another parallel system to the existing two systems
 - Alternative 3: other

This subsequently undermines the sustainability of the NDF-funded infrastructure. There are therefore several independently run and operated systems in Prestea, which undermine the capturing of synergies and economies of scale that a larger system could provide and thereby a greater chance of sustainability.

The issue of the operations and maintenance of the system has gone through some turbulence and the optimum and sustainable location has still not been found. Two years after construction the Prestea Urban Council "took over" the system from Environmental Engineers for them to operate and maintain. There was training undertaken by Colan Consultants in the operations and maintenance of the Prestea Urban Council – but this was more of a general training – not specific on the system based on a Training and Operations manual. This process has been very disorganized and left the communities in a situation with poorly maintained and operated system. In October 2008 the Prestea Community Water and Sanitation Board "took over" the operations of the system. There has been no training of these persons.

5.3.1 Relevance

The project of access to potable water and sanitation was and still may be relevant for the communities in Prestea as they didn't have access to potable water and appropriate sanitation. However, is this really compatible with the mandate of the Mineral Commission?

5.3.2 Efficacy

Although two reports were elaborated in order to define this component, it is unclear to the evaluators how the Mining Commission ended up with a water supply and sanitation project, which is not one of the core mandates of the agency. As demonstrated in the more recent study: Swedish Geological AB: Sector Environmental Review (SER) of 2001, the Prestea mine still has several serious issues related to its mining activities - issues which would have been more pressing to the MC than a water supply and sanitation system.

Table 11: Excerpt from Swedish Geological AB: Sector Environmental Report

The great majority of Ghanaian mines is using particular expertise in the design of their tailings impoundments, and also use this expertise for regular inspections. Some general observations regarding the status of existing tailings impoundments are summarized in *Table 4.9*. Only in the case of Prestea Gold is the situation very primitive and totally unsatisfactory, with low walls built (using spades) directly from the tailings material and with no compaction. Actually, all of the mining ventures visited by us, except Prestea Gold, have embarked on quite ambitious schemes for total reclamation and reforestation.

Old tailings in the Prestea area. About 3 M tonnes were deposited in the small open valley adjoining the beneficiation plant; more than half of this has been re-treated by the Prestea Sankofa Gold and deposited in an appropriate tailings dam. A larger, but unknown, quantity of tailings have over the years been discharged to the Ankobra river and presumably been deposited along the river bed of this river; in fact, smaller quantities still are discharged in this way. At *Bonday* in the NW part of the Prestea mining field, about 1.5 M tonnes are deposited in a tailings deposit, which is eroding strongly and still after 50 years has not re-vegetated.

Discharges from tailings impoundments or heap leach facilities

The great majority of the mines have planned for a closed circuit process that is they all have fairly appropriate tailings impoundments; they have the ambition to re-circulate all water from the tailings impoundment to the process; and seepage water is collected in sumps and pumped back to the impoundment. A flagrant exception to this rule is at Prestea Gold where the tailings dams are in a precarious state and the total environmental situation is wholly unacceptable. The mine has a long history of contaminating the river system, but the present production level is very low.

By and large, it may be said that such management functions well at Ghanaian mines. An exception to this is, however, the situation at the mine of Prestea Gold where tailings control is very neglected.

This report signals a number of outstanding environmental mining issues to address, which are related to achieving a healthy environment in the vicinity of the Prestea Mine.

However, once the PWSS was selected for implementation, the recommendations elaborated in VA-Ingenjoererna AB: Prestea Water and Sanitation Project: Review of Environmental Priorities, August 1999 has not been implemented with resultant problems of water quality and operations and maintenance of the systems. Why was a separate system designed and developed? A functioning system might have contributed towards the development objective.

5.3.3 Efficiency

The Minerals Commission doesn't have a mandate to own and operate water supply and sanitation projects and doesn't have the required expertise in the area of water supply and sanitation. At the time of the design of the project, co-funding with the Austrian project would have been cost efficient, but this opportunity appears not to have been explored (and depending on the modality, may have fallen beyond the possibilities of NDF financing).

The MC has not taken advantage of the funding to strengthen the PMU with such expertise. This has resulted in delays of implementation and solutions which have not always been optimal for an efficient project execution.

It is not possible to accurately assess cost efficiency, as there are no indicators or unit prices developed for the project. The project shows low signs of efficiency for the following reasons:

- The water is not potable as it contains a high degree of iron and sediment. The repeated recommendations to include iron removal plants and disinfection mechanisms were not addressed.
- The institutional linkages do not lead to efficient solutions; there is no institutionalization at the district assembly or effectively at the Ghana Water Company. Water supply and sanitation should typically be coordinated – and co funded – at the district level.
- The recommendations of the study of the VA Ingenjoererna were not followed. there was no least cost study made in order to find the most cost efficient investment alternative; the possibility of the Prestea mine closing its operations, would warrant an assessment of including this water supply system in a larger system, as well as creating and extended and consolidated system with the Ghana Water Company's system.

5.3.4 Impact

The impacts are described in the observations of the local stakeholders in Annex 4 – lessons learned – both positive and negative.

The desired impact of providing access to potable water and sanitary latrines has not been achieved. Water is provided but not for drinking. It cannot be used for washing clothes either, as it stains.

5.3.5 Sustainability

Institutional sustainability

The following is reported in the Minerals Commission: Borrowers' Completion Report: Annex A – Operation of the Prestea Water and Sanitation Facilities

The construction of the facilities for the Prestea Water and Sanitation were completed in May 2004. However to ensure sustainability of the facilities through proper maintenance, a Community Water and Sanitation Board (CWSB) was set up to ensure that the facilities were efficiently operated. Messrs Colan Consult, the consultant that trained the Board in the management of the system, recommended that either the CWSB operated the system on behalf of the community or a preferred option of engaging the services of a private operator to operate and maintain the system and subsequently account to the CWSB. However, the search for a private operator, with assistance of the Community Water and Sanitation Agency that provided list of private companies engaged in operation and maintenance of similar systems proved futile. Currently, the CWSB is operating the system in the community along guidelines established by the Community Water and Sanitation Agency. The search for a private operator however continues.

Norconsult's Baseline contains an institutional analysis. However, it fails to assess and address the roles and responsibilities of such institutions, as the district assembly, the Community Water and Sanitation department, the Ghana Water Works, Golden Star etc. and an exploration of synergies between the actors.

Is it compatible with the mandate of the Minerals Commission to own water supply and sanitation infrastructure? The facilities were originally operated by the contractor the Environmental Engineers from Accra, but "taken over" by the Urban Council of Prestea. Subsequently, the system was "taken over" by the Prestea Urban Water and Sanitation Board in October 2008. The Prestea Urban Water and Sanitation Board has a Chairman and a representative from each electoral unit in Prestea (where there is a presence of the system). They claim that they need training to run and operate the system.

The MC has not established the required institutional linkages with the GWC, the District Assembly, and the Golden Star Mine etc. in order to optimally institutionalize the project. Required linkages and coordination with other on-going projects have not been developed (including the Ministry of Local Government, Wassa District Assembly, Austrian nation-wide support, CIDA support).

Financial and budgetary sustainability; macro economic stability, revenue generation and stability of commodity prices

The financial sustainability of the system is in jeopardy. The revenues appear not to be sufficient to cover the costs of operations and maintenance and the operators have inherited and now accumulated some debt. The Prestea Urban Water and Sanitation Board states that they owe money for electricity, doesn't have funds to buy chemicals for the up keep of the facilities, need funds for filters, etc. During the visit and meeting with the Manager of the Gold Star mining company some filters were promised.

Regulatory and policy sustainability

The District Assembly is the highest authority in the district and responsible for water and sewerage to the citizens. The Urban Council reports to the district assembly. In Prestea the Ghana Water Company already owns and operates a system successfully. As mentioned above, it is therefore doubtful whether Minerals Commission may have the mandate to own water supply and sanitation infrastructure.

Technological sustainability

There are a number of issues related to the technical sustainability

- The system is not integrated with other systems in Prestea and it is therefore low in terms of cost efficiency and financial sustainability, as one single large system would normally have economies of scale
- No iron removal plant was installed
- No disinfection mechanism was installed
- There are no water tanks on some of the public sanitation facilities
- The consultants couldn't find any user-friendly operations manual of the systems. For example, the bore holes and the water tanks need regular cleaning and maintenance to function properly.

Environmental sustainability; approach to Corporate Social Responsibility issues; application of best practices on sustainable mining in the project cycle

The setting up of the Mining Development Fund and channelling some funds back to the communities in the vicinity of mines should be explored as co financing entities for investments like the water supply and sanitation project in Prestea.

An awareness campaign on sanitation is a usual element of water supply and sanitation projects, but this is missing on this project.

5.3.6 Replicability

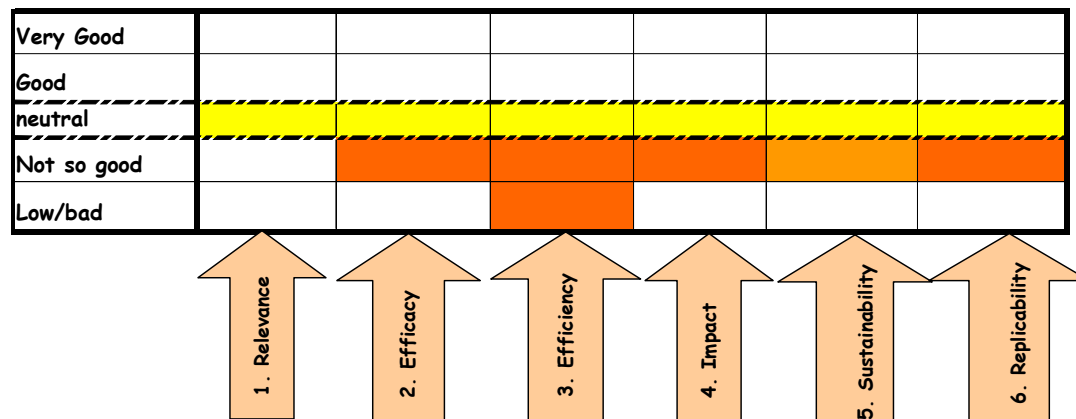
This project should not be replicated in its present shape.

5.4 Crosscutting issues: climate change, environmental management, gender

The project as such has impacted on environmental issues, in the sense that it has contributed with non potable water closer to the residences and water users. Public latrines have been supplied, but they need to be improved on the management and operations. It is not possible to see any specific gender strategy or approach, although women are the main users of the water.

5.5 Rating of evaluation criteria

Fig. 1 SUMMARY EVALUATION CRITERIA
Component 1 Prestea Extended Water Supply and Sanitation



The project is relevant to the population of Prestea, albeit not as a component to be executed under the Minerals Commission. It has not contributed towards the development objective of providing potable water. The rating on efficiency is very low for several reasons: a parallel system has been established with no synergies with other existing systems, the required iron removal plant and disinfection mechanisms have not been installed and it has been very inefficient in addressing cost efficient approach to the operations and maintenance of the systems. There is no user friendly manual on the operations and maintenance of the system and there was no awareness campaign for the population. There is very low sustainability of the systems as they are currently managed. The experience is not replicable.

5.6 Conclusions/lessons learned

A water supply and sanitation system of this nature is not very suitable for NDF financing, as there is a need for a considerable local content in the project. Institutional arrangements, where the relevant agencies are included in the project management unit, are critical for a successful project. Avoidance of duplication between systems will contribute to sustainable solutions.

The EITI initiative is contributing to an increased clarity of how mining revenues and royalties are utilized by the Ghanaian government to redirect revenues to the local communities. There are existing financial mechanisms to redirect revenues from the mining sector back into the communities living in the vicinity of mines. This is precisely where coordination mechanisms need to be explored at different levels – particularly at district assembly – in order to contribute towards the sustainable use of the water supply and sanitation project: at the district assembly, at the traditional authority etc.

5.7 Recommendations

When meeting with the District Coordinating Director of the District of Prestea and Honey Valley he recognized the problem with multiple water supply systems in Prestea and confirmed the need to harmonize them. It is recommended to develop a mechanism to release the MC from the ownership of the water supply and sanitation systems and the responsibilities to oversee the operations and maintenance of the systems.

Undertake an independent study to: review the population projection of Prestea in the light of future mining activities, assess the technical problems and identify solutions, assess the institutional arrangements and make recommendations on an optimum institutionalization of the systems at appropriate levels, analyze the operations and maintenance of the systems,

including the financial situation of the Prestea Urban Water and Sanitation Board and the NDF financed system and based on this study work out modalities to ensure future sustainability of the systems.

6. Component 2: Airborne Geophysical Survey

6.1. Description and Objective

The objective of the airborne geophysical survey is to attract further investment in exploration and mine development in new areas in Ghana. This will be done (i) by providing geological information for such areas using state of the art technology and thus improving the geological information base of the Geological Survey Department, and (ii) to train the staff of the Geological Survey in processing and interpretation of geophysical and remote sensing data

The component was identified in the World Bank: Mining Sector Development and Environment Project as follows:

Table 12: Excerpt from the World Bank: MSDEP

This project sub component is aimed at determining priority mining areas attractive for their subsequent promotion to potential investors in order to sustain further sectoral growth. This activity has been assigned a high priority because of a recent downturn in investment in exploration and mine development, which raises an urgent need to use more advanced geological technology to develop new geological information. For this purpose, the use of airborne geophysical survey technology has been selected mainly because of its low cost and ability to carry out rapid mapping of extensive areas. This will be used to identify target areas for exploration of gold and base metals.

Main elements include: (a) the compilation and interpretation of available geological information; (b) the definition of priority areas to be covered by the aerial survey; (c) the preparation of an action program with detailed survey specifications; (d) the selection of a survey contractor, and mobilization and execution of the survey; (e) the reinforcement of geophysical capability at Geological Survey (GS), structuring these functions away from detailed mineral evaluation activities (which should be left to potential investors); (f) the processing and interpretation of survey data; and (g) the publication and dissemination of results and raw data. The IDA credit would finance the aerial survey, consultant services to assist GS, and training.

6.2. Planning and Implementation

Three contracts have been financed by NDF and executed for this component:

1. Geological Survey of Finland: GTK

Airborne geophysical survey and mapping to attract further investment in exploration and mine development in new areas in Ghana.

2. Geological Survey of Sweden: Processing of Data from the Geophysical Survey

Improve the geological information base and train the staff of the geophysical mapping unit in the processing and interpretation of geophysical and remote sensing data.

3. High-Sense Geophysics Limited: Contract for Airborne Geophysical Survey in September 1999

Compilation and interpretation of available geological information in five priority areas

6.3 Evaluation

6.3.1 Relevance

This is a highly relevant project and it was identified as a priority project in the World Bank: Mining Sector Development and Environment Project.

The Swedish Geological: Study of Mining Sector Institutional Arrangements¹² of 1997 states:

Further positive development of the mining sector in Ghana will be impossible without substantial intensification and diversification of exploration, which both are constrained by the mineral potential of the country and by the availability of lands for exploration. Ghana suffers from a large shortfall between "perceived geological potential" of the country based on analogies, and actual knowledge about its mineral endowment based on modern geological and geophysical mapping. The dearth of geophysical maps is presently amended by the internationally aided airborne geophysical survey project (NDF Credit No. 156), but only 7.8 percent of Ghana's territory is covered by modern geological maps. Execution of a regular and a systematic geological and thematic mapping, and establishment of a mineral resource information system, remain therefore indispensable preconditions for the diversification of exploration. The geological survey must play the crucial role in this respect.

It was reported by GSD that several large mining companies had acquired this mapping.

However, with reference to chapter 4.2 which elaborates on Sub Component 2.3: Improved Geological Information was also anticipated for the small scale mines as described in the following:

A program to make geological information available to small-scale miners, who now operate without any reliable information as to the location and extent of exploitable ore, would proceed simultaneously with the activities designed to improve SSM technology. The GS would organize teams consisting of a geologist, a technical officer and laborers to delineate areas with favorable geological prospects where SSM concessions can be granted, and to work with the small-scale miners in delineating recoverable mineralization after a concession has been obtained.

The potential relevance of this component and the potential use of this geological mapping information for the small scale miners appear not to have been pursued by the project. The World Bank: Project Performance Assessment Report: Ghana mining Sector Rehabilitation project (Credit 1921-GH) Mining Sector Development and Environment Project (Credit 2743-GH), July 1, 2003 is also silent on this sub component.

This sub component of air borne mapping has subsequently been complemented with additional interventions under the subsequent EU funded Mining Sector Support Programme (MSSP).

6.3.2 Efficacy

The component has successfully contributed to the overall objective.

6.3.3 Efficiency

The project appears to have been efficiently implemented. Following lessons learned are listed in GTK's Final Report from 1997¹³ as a list of items that may cause delays in similar surveys:

- Fuel for the aircraft as well as for the car is one of the most critical things. Due to some problems in Ghana's oil refinery there was a couple of days' shortage of JetA1 aircraft fuel in Accra in the beginning of February. Also at least in Tamale it was difficult to get petrol for diesel cars in the end of April and in the beginning of May.
- Although the base station equipment has battery backup, some electricity is needed to charge the batteries and for the computer to do the quality control and preliminary data processing. If there are any problems in the national grid a generator has to be reserved to guarantee continuous operation and data processing.

¹² Swedish Geological AB: Final Report Study of Mining Sector Institutional Arrangements, page 45

¹³ Geological Survey of Finland (GTK): Airborne Geophysical Survey in Ghana, Final Report by Jukka Multala, Heikki Hautaniemi, 1997

- These kind of aero geophysical surveys are flown according to so called Visual Flight Rules (VFR) in Visual Flight Conditions (VFC) and those rules require certain horizontal and vertical visibility. As for the local area phenomena Harmattan – the dusty wind from North – can prevent survey flights occasionally for several days and during some years for several weeks.
- A small delay was caused by the low lying clouds on the Western side of the mountains located close to the Eastern border of Ghana. The sun is evaporating the water from Lake Volta and the South West wind blows the wet air against the mountains where the moisture condenses and forms clouds just below the top of the mountains.

6.3.4 Impact

It is difficult to assess the impact unless the mining companies are interviewed or the Chamber of Mines in Ghana is interviewed. The team didn't have the opportunity to arrange for this.

6.3.5 Sustainability

Institutional sustainability

As seen in the organisational charts in Annex 3, GSD's institutional location is under the Ministry and it is dependent on financing from the Ministry of Finance and Economic Planning (MoFEP). All revenues from sales of maps are submitted to the MoFEP and a small budget is defined each year from the State budget. GSD is not benefiting from any revenues from the mining sector, such as funds channelled through the Minerals Development Fund (MDF) or otherwise. As seen further under the Component 4: Geological Survey Department, this threatens any maintenance of investments in personnel and/or equipment due to a lack of recurrent financing. Clearly this is an issue for the GoG to study and hopefully resolve.

Regulatory and policy sustainability

See below under Component 4: Geological Survey Department for the current legislative and regulatory framework for the Geological Survey Department and its efforts to become a "semi autonomous agency".

6.3.6 Replicability

EU has continued to support additional airborne survey studies to complement the work started under the NDF funded intervention.

The objectives of this support are to:

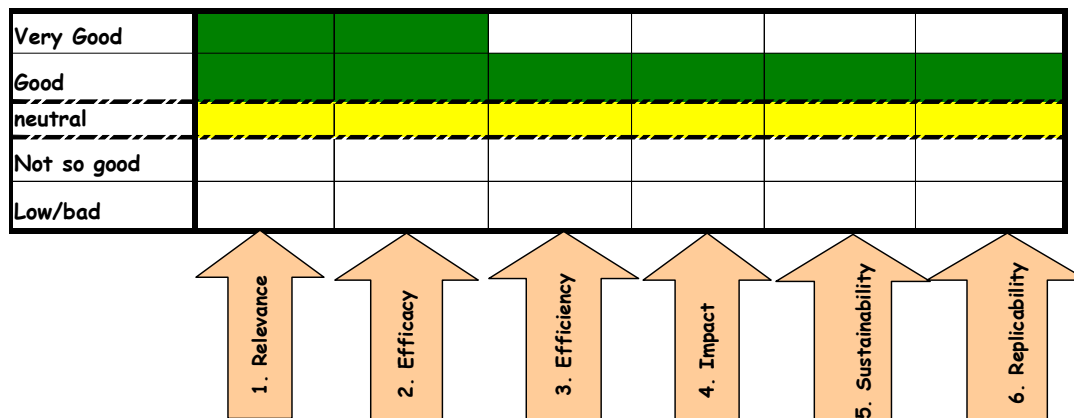
- Perform airborne geophysical surveys over the Volta and Keta Basins over an area of 98,000 km²
- Maintain the processing and interpretation skills of the GSD geophysicists
- Test hypothetical possibilities of the occurrence of sediment-hosted base metal mineralization and diamondiferous kimberlites
- Provide a geological framework to perform future geological mapping for mineral exploration and ground water resources

The scope of the interventions has been to:

- Phase 1: geological outline through Radar and optical satellite imageries
- Phase 2: airborne geophysical survey over the two basins for magnetics and spectrometry
- Phase 3: airborne electromagnetic and magnetic geophysical survey of specific areas, following the completion and interpretation of phase 2, using fixed wing time domain technology
- Phase 4: interpretation of the combined geology and geophysics
- Phase 5: production of factual and interpretation maps

6.4 Rating of evaluation criteria

Fig. 2 SUMMARY EVALUATION CRITERIA
Component 2 Airborn Geological Survey



The elaboration of the geophysical maps is highly relevant for the sustained growth and diversification of the sector. The identification and subsequent planning of the actions appear to have progressed smoothly. The scores on sustainability and replicability are also high as these are basically state of the art technology, which adhere to international standards. The GSD's ability to acquire adequate resources through the MoFEP is a threat to the institution.

6.5 Conclusions/lessons learned

World Bank: Project Performance Assessment Report: Ghana Mining Sector Rehabilitation Project (Credit 1921-GH) and Project Sector Development and Environment Project (Credit 2743-GH), July 1, 2003

At the Geological Survey Department the project funded a significant amount of airborne geophysical surveys, software, hardware, and consulting services¹⁴ for its interpretation. The latter work is still ongoing. The diagnostic studies of the GSD as an institution (also carried out under the project) concluded that it was moribund, in need of radical restructuring and that it should subcontract much of its technical work to specialized, outside firms. The GSD senior staff had a totally different philosophy and believed that in-house capabilities should be developed to do all the analytical work. The restructuring proposals were never accepted by GSD and neither the MC nor the ministry was in a position to impose change. In recent years the GSD has found its financial situation growing increasingly worse as funding from the MDF dried up and the Bank's project closed. It is still greatly overstaffed at the lower skill levels and its operating budget from MOF is inadequate for it to function effectively. The ID impact of the project on the GSD is rated as modest.

Outcome

The project is assessed as moderately satisfactory in light of the project's continuing relevance and the substantial progress in its capacity-building objective.

Borrower performance

The MC executed its project coordination role satisfactorily. Implementation problems with other sector institutions and conflicts over turf were not solely of its own making. However, it should have been more proactive in attempting to salvage the SSM component of the project.

GOG's performance is assessed as unsatisfactory because it did not provide proper sector leadership in general and specifically failed to impose a solution to the impasse on the reform of the GSD. Its decision to set up a new Ministry of Mines without any resources is not an example of good governance. Finally, the retention of MDF funds by the MOF is undermining the sector entities, undoing the gains of project and is politically short-sighted.

Overall borrower performance is therefore assessed as unsatisfactory.

¹⁴ essentially funded by NDF, which also provided a resident TA adviser to the GSD

The EITI process is bringing more clarity to the revenue flow of benefits from the mining sector operations and their potential use and application by the government. GSD has been “lucky” in the sense that EU has brought in more support subsequent to the NDF funding, but the budget assigned by the MoFEP is totally inadequate to provide for recurrent funds for the up keep of the agency. Without minimum funds, trained personnel will not remain and there will not be enough funds to up keep the investments in equipment and vehicles.

6.6 Recommendations

Prior to agreeing on future donor-funded support an agreement should be negotiated with the Ministry of finance and Economic Planning on continued budget for the required upkeep of recurrent costs at the relevant institution.

7. Component 3: Implementation of Recommendations from Institutional Study

7.1. Description and Objective

The background to the elaboration of a Sector Environmental Review (SER) study can be traced back to Swedish Geological AB’s Study on Institutional Arrangements (1997) where the need for a Sectoral Environmental Assessment (SEA) was identified as follows¹⁵:

On a national level, Sectoral Environmental Assessments (SEA) has proved to be effective planning tools for environmental management. A SEA of the mining sector is an overall study on environmental effects of past, present and projected future mining activities, on which basis the government can formulate its environmental policies concerning the sector. The SEA can also indicate how the use (depletion) of mineral resources in the country should be measured taking into account environmental impacts, and appraised against alternative uses of land and natural resources. Finally, such a study provides guidelines on how the sector should be most effectively regulated. The preparation of the SEA is a responsibility of the mining sector institutions. In Ghana, the SEA of the mining sector should be prepared shortly by the new environmental Department of MINCOM.

Terms of Reference for an intermediate study, a Sectoral Environmental Review (SER), were developed and a contract between Swedish Geological AB and NDF agreed. The objective of the SER study is expressed as¹⁶:

The MSDEP is being implemented against the backdrop of recently approved mineral sector policy, which states the following objectives for the Government:

- Achieve sustainable development of the mining sector, technically through continuous exploration to find additional resources and financially by obtaining commensurate returns on investment.
- Maximize and sustain the expected contribution of the industry to the development of the economy as a whole, as well as to the development of the local communities.
- Promote the use of environmentally sustainable and socially acceptable means of exploiting all economic mineral resources.

The present Sectoral Environmental Review (SER) is linked to these efforts.

The present SER aims at supporting the Government’s policy for promotion of mining activities, executed in an environmentally sustainable way, by providing an overview of the environmental situation within the sector. This overview should assist the Government in

¹⁵ Swedish Geological AB: Study of Mining Sector Institutional Arrangements, page 52

¹⁶ Swedish Geological AB: Sectoral Environmental Review, 2001

its formulation of environmental policies concerning the sector and in its decisions regarding how the sector should be most effectively regulated.

7.2. Planning and Implementation

The identification of this component was done in the study: Swedish Geological AB elaborated the Study of Mining Sector Institutional Arrangements in December 1997.

The study was a sub-component of the Mining Sector Development and Environmental Project (MSDEP) and was funded by the International Development Association (IDA) (Credit 2743-GH). Action # 10 of this study identified the need for the Preparation of a Sectoral Environmental Assessment. See Table 5: Recommended priorities in 1997 and actual in 2009 above.

Subsequently Terms of Reference were elaborated for a **Sectoral Environmental Review (SER)**, which was funded by NDF and executed by Swedish Geological AB in 2001. The justification of the Sectoral Environmental Review (SER) is vested in the mining sector review mentioned above. The contract was signed between NDF and Swedish Geological AB on July 11th, 2001.

The study is based partly on data available from the archives of companies and governmental authorities, partly on information gained during site visits to altogether 22 mining operations, these latter representing all of the sub sectors regulated by the mining law.

Gold mining; industrial scale

- Ashanti Goldfields: Bibiani Limited
- Ashanti Goldfields Company Limited: Obuasi
- Bogoso Gold Limited
- Gold Fields Ghana Limited, Tarkwa
- Normandy Ghana Gold Limited
- Prestea Gold Resources
- Prestea Sankofa Gold Limited
- Resolute Amansie Limited
- Satellite Goldfields Limited

Gold exploitation in alluvial deposits; industrial scale

- Awaham (Karouchi Mining Company Ltd)
- Bonte Gold Mines Limited
- Nungo Gold Limited

Gold; small-scale and artisanal workings

- Akoon cooperative gold mining society
- Bolgatanga small scale mining area
- Prestea – Mallam Kassum concession

Manganese mining

- Ghana Manganese Company Limited

Bauxite mining

- Ghana Bauxite Company Limited

Diamond mining; industrial scale

- Ghana Consolidated Diamonds Limited

Diamonds; small-scale and artisanal workings

- Diamond Winners Association

Stone quarrying

- Adamrabe quarry

Salt winning

- Panbros Salt Industries Limited

Sand winning

- Alahji-Issa gravel excavation. – Laurencia Ashdam sand excavation

Stakeholders in the study included:

- Mineral Commission
- Environmental Protection Agency (EPA); head office in Accra and regional office in Tarkwa
- Chamber of Mines
- Mines Department
- Geological Survey
- Forestry Commission
- □Water Resources Commission
- Districts Assemblies in Tarkwa and Bolgatanga
- Traditional chiefs in Tarkwa
- MC regional offices in Tarkwa and in Bolgatanga
- SGS Environmental Services

7.3 Evaluation

This study fills a gap of providing a holistic and professional assessment of the mining sector and is very important.

7.3.1 Relevance

The study is relevant within the wider context of mining sector reform as defined in the study above. The study results in a number of recommendations on prioritized and urgent actions to be taken under the topics of Environmental issues in small scale mining; Technical guidelines for the rehabilitation of mining areas; Inventory of tailings deposited at inappropriate sites and evaluation of the risk associated with arsenic pollution; Improved safety management at mines; Establishment of complementary environmental standards for the mining sector; and Supervision of sand winning.¹⁷

7.3.2 Efficacy

Together with other complementary activities this study contributes significantly towards the development objective of the mining sector.

7.3.3 Efficiency

This study is rated by the evaluation team as providing high value for money spent.

7.3.4 Impact

A summary of the main sources of contamination and impacts associated with the mining activities is presented below¹⁸. The potential concern, that is the possible negative effect that may result if no measures are taken, is rated from 1 (very low) to 5 (very high).

¹⁷ Swedish Geological AB: Sector Environmental Review, 2001

¹⁸ Swedish Geological AB: Sector Environmental Review, 2001

Table 13: Summary of contaminant sources and hazards related to mining in Ghana.

Contaminant sources/hazards	Extension	Potential concern	Measures presently taken to match the concern
Contaminants; toxic elements, compounds			
Mercury; artisanal miners' activity	Very widespread	5	Very limited
Mercury; pollution stocks from alluvial dredging operations	In the Ankobra and Pra river basins	4	None
Cyanide	At most gold mines	5	Well managed at most mines
Arsenic	At many gold mines	4	Measures taken at most of the affected mines
Acid Mine Drainage	At a few gold mines	2	Measures taken at the affected mines
Solid waste			
Old tailings being eroded by drainage water: pollution stocks	Various locations at Prestea and at Obuasi	3	Poor control at certain sites
Suspended solids in river water: pollution flows	Discharge of tailings at mines (i) Widespread artisanal workings (ii)	3	A few offending companies (i) None (ii)
Landscape impact			
Large-scale open pit mining	15-20 sites	4	Rehabilitation planned/carried out at most mines
Alluvial mining	4-5 sites	4	Larger operations fairly good, smaller poor
Artisanal mining	Many, small sites spread over the country	4	None
Sand winning	Many extensive sites around major towns	5	Poor
Accidents			
Dam failures	A few high dams that possibly represent a risk; although most dams are low	4	Some cases warrant auditing
Socio-economic issues			
Relocation of villages and people	Common at the start up of any mining	4	Usually well managed
Galamseys	A major problem in various parts of the country	4	Measures taken have had little effect hitherto

The EC's Mining Sector Support Project (MSSP) has undertaken the elaboration of the anticipated National Environment Impact Assessment in Mining and Exploration Areas and a Strategic Environmental Assessment (Project Nr 8 ACP GH 027). The objectives are as follows:

- To review existing information and to obtain new data from present, past and potential future mining sites, in order to identify the areas needing attention for immediate and future mitigation. (EIA component)
- To obtain information from areas affected by mining in order to evaluate existing policies, institutions, plans and programmes, followed by recommendations for the development of better policies (SEA component)

The project covers all mining activities, including precious and other metals, diamonds, salt, quarries, sand winning operations, burrow pits, etc. it shall identify, describe and assess the effects of the mining activities on each component of the natural environment; sustainable resources for communities like fertile lands, woodlands and pastures; and social components like health and security, economy and livelihood, cultural issues, land use and general well-being.

Implementing companies are Swedish Geological AB, AY&Y Consult (Ghana) and Golder Associates (UK).

It appears that World Bank’s new project ‘Natural Resources and Environmental Governance’ is addressing several of the issues raised in the study. As this funding is of basket nature with provision from Agence Francaise de Developpement (AFD), the United Kingdom’s Department for International Development (DIFD), the European Commission (EC), the Royal Netherlands Embassy in Ghana (RNE) and IDA, there is a substantial potential for impact.

7.3.5 Sustainability

Institutional sustainability

This study was undertaken within the institutional context of Ghana and addressed several issues to strengthen the sustainable mining sector.

Financial and budgetary sustainability; macro economic stability, revenue generation and stability of commodity prices

EC has already taken up related studies in their MSSP program. It is anticipated that the upcoming World Bank NREG will also provide continuity to this study’s findings and recommendations.

Regulatory and policy sustainability

The study is specifically addressing issues to reinforce the regulatory and policy issues of the mining sector.

Environmental sustainability; approach to Corporate Social Responsibility issues; application of best practices on sustainable mining in the project cycle

This is critically addressed by the study.

Ability to undertake risk analysis and risk mitigation to major global changes including climate change and GHG emissions

Doesn’t really address climate change, however the future World Bank-funded project ‘Natural Resources and Environmental Governance, which is anticipated to address the development of a climate change strategy.

7.3.6 Replicability

The identification and formulation process of this sequence of studies may be considered for replication elsewhere.

7.4 Rating of evaluation criteria

Fig. 3 SUMMARY EVALUATION CRITERIA

Component 3. Implementation of Recommendations from Institutional Study

Very Good						
Good						
neutral						
Not so good						
Low/bad						
	1. Relevance	2. Efficacy	3. Efficiency	4. Impact	5. Sustainability	6. Replicability

The recommendations made in Swedish Geological AB: Study of Mining Sector Institutional Arrangements is systematically being implemented by the relevant governmental institutions and donors. The SER is filling a gap in the knowledge base of the sector. However, EC's MSSP is addressing the specific elaboration of the National Environmental Impact Assessment and the Strategic Impact Assessment.

7.5 Conclusions/lessons learned

The government has continuously pursued a path towards sustainable mining, which has been facilitated by donor funding and very opportune and professional studies by – in this case – Swedish Geological AB – and with financing by World Bank for the first and by NDF for the second study which has provided for efficacy and efficiency. The Study of Mining Sector Institutional Arrangements was followed by the SER and currently EC's funding of the National Environmental Impact Assessment and the Strategic Impact Assessment. Subsequent funding by government and donors and complementarity between them has been a very effective instrument.

7.6 Recommendations

It is strongly recommended to make the key documents easily accessible on MC's web page.

- Minerals Commission - Swedish Geological AB: Study of Mining Sector Institutional Arrangements, 1997
- Minerals Commission - Swedish Geological AB: Sectoral Environmental Review (SER), 2001

Both studies should provide key input into future actions by government and funding by donors such as the new World Bank funded Natural Resources and Environmental Governance, 2008

8. Component 4: Geological Survey Department

8.1. Description and Objective

The design and formulation of this project is based (almost) uniquely on the 'Study of Institutional Arrangements' elaborated by Swedish Geological AB¹⁹, summarised below.

The restructuring of the GGS will be performed with international expert assistance and financial aid. Ideally, the GGS should enter into a "twinning agreement" with a geological organization from a country with a substantial mining sector. This geological organization would assist the GGS at all stages of the reconstructing process by placing at GGS' disposal "twins" for the key positions, by arranging GGS' staff training at the assisting institution, and by providing "on-line" support after the reconstruction. The actual reconstruction of the GGS should be done with the help of *two capacity building projects*. *The first project* should concern *geological mapping* (i.e. introduction of modern technology employing airborne geophysical maps, satellite imageries and GIS, and preparation of digital geological maps). *The second project* should concern *thematic mapping* related to mineral resource. As the compilation of a thematic map is impossible without a modern geological map, the two projects are interdependent. This means, the two development projects have to be carried out in two successive steps. The project will result in a thematic map in a scale of 1:100,000, overlapping the new geological map. Concurrently with the mapping projects training of GGS' specialists (structural geologist and digital cartographer) should be arranged at the "twin" institution. The structural geologist will be particularly trained in interpretation of satellite imageries with help of specialized computer programs. The geological database and information system will be custom designed and established with expert assistance. The database must be fully functional before the second project commences. A geological repository should be established in three successive phases: (i) feasibility-study, engineering, procurement of equipment; (ii) construction of the repository and installation of internal fittings; (iii) implementation, i.e. establishing of a system for indexing and labeling of samples; actual storing of samples. The complete reconstruction of the GGS should be accomplished in 36 calendar months.

8.2. Planning and Implementation

Furthermore, the conceptualization of the restructuring of the GSD and of MD is found in the same document (Swedish Geological AB: Study of the Institutional Arrangements, page 53).

Principles for the transformation of the MD and the GSD into autonomous agencies

As a major jurisdictional reform, it is proposed that the GSD and the MD should be transformed into autonomous agencies within the MEM sphere (while the MD best can be labelled an agency, the GSD should rather be seen as an institution).

These restructured agencies would negotiate a time-limited (one year or longer) agreement between themselves and the Minister of Energy and Mines, specifying the results the agency would achieve and the budgetary framework within which it would operate. Ideally, the institution should keep an "arm's-length" contractual relationship with the MEM. The Ministry should determine its policy goals, define the quantity and quality of outputs that would assist in achieving these goals, and then make an agreement to purchase the products at a specified price. For example, a goal related to GSD's functions would be the establishment of the basic geological infrastructure for the mining sector, and the agreed output, a specific amount of geological maps per year at a fixed price. In relation to the MD, one of the politically desirable goals is the mines' safety. The safety in mines is easily measured by the number of accidents and incidents in the mines, and there are a number of outputs for achieving the desired outcome (e.g. specific outputs such as a number of mine inspections, establishing preventive S&H programs and training of workers, the overall output being a reduction in the number of accidents).

In order to make these agencies (and personally their chief executives) fully accountable for delivering the agreed outputs, the GSD and MD must be fully empowered to decide how to best produce these outputs. That means ending the civil service administrative system, and giving to the GSD's and MD's chief executives the power of hiring, firing, salaries, as well as substantial overall control over the agencies' budgets. Typically the agreements should be negotiated annually, which would give the Minister a genuine control of what the GSD and MD actually produced.

¹⁹ Swedish Geological: Final Report Study of Mining Sector Institutional Arrangements, December 1997

Geological Survey of Denmark and Greenland (GEUS) was contracted by NDF to provide Technical Assistance and to strengthen the GSD.

8.3 Evaluation

The study on Institutional Arrangements largely sees the restructuring process as requiring accompaniment and access to a “twinning” process with another Geological Survey from another country. There is however no exploration of the Ghanaian context: the roles and responsibilities of the Public Sector Reform project with funding from the World Bank with the specific mandate to accompany the governmental restructuring process. See above. Or with the Ministry of Public Sector Reform which has had the governmental responsibility to accompany and address the restructuring process. Also, there is no mentioning of the roles and responsibilities of the Head of civil Service in revising the Schemes of Services.

Generally, it may be said that those other recommendations have been successful whereas they have been dependent on the internal actions of the mining sector institutions. However, the restructuring of the GSD has achieved its *internal* restructuring goals, but in order to achieve a full restructuring it is also dependent other institutions external to the mining sector institutions, such as the Parliament, Ministry of Finance, President’s Office, Head of Civil Servants etc.

8.3.1 Relevance

The relevance of the support is defined in the Study on Institutional Arrangements elaborated by Swedish Geological AB. In the light of international trends and specific needs and requirements in Ghana, this study makes a recommendation (found in its Annex 3 and reiterated below) of a total overhaul of the institution.

As the diagnosis indicated, in its present state, neither the GSD as a whole, nor its parts could be transformed into an effective organization without a complete overhaul, including establishment of new systems for GSD’s accountability. In this regard, there are several “myths” circulating inside and outside the GSD, about what could be done to improve its performance. One “myth” says that the Survey can improve sufficiently and run well, if the Government provided more funds for its operation. This may be true partly, however, pouring money into a dysfunctional organization would not yield significantly better results. In reality, the way the scarce resources are used must change dramatically, if the outcome is to be expected to change markedly. Another “myth” is that the GSD can be improved, and the Government relieved from its financial burden, if the Survey were to be run like a business, i.e. be commercialized or quasi-commercialized. In reality, there is no segment of the GSD in its present shape (not even the geophysical division) that could possibly transform into a commercial organisation without substantial initial investment, and which would be sustainable without state subsidy in the long run.

Consequently, if the GSD is not to be abolished outright and its presumed services rather purchased from private consulting companies, it must be build-up “from scratch”.

This has not been possible during either the NDF funded support or during EU’s support. An incremental and gradual internal reorganization has been achieved during the two support processes. However, this solution is not sustainable given the limited funds which will be forthcoming from the MoFEP.

8.3.2 Efficacy

Substantial support: elaboration of maps and training and other capacity building of GSD staff have taken place – however, the support is not fully contributing towards the development objective of establishing an autonomous agency/institution.

This study did not link into the (at that time) on-going public sector reform process and specifically the World Bank-funded Public Sector Management Reform Project (PSMRP). There was no high level steering committee linking the reform process at the GSD into this government-led reform process. The project design lacks many elements which are required to successfully accompany a restructuring process, above all a mechanism to retrench staff. There were no specialists in change management and no mechanisms to support redundant

employees. An opportunity was lost to provide bottom-up TA assistance to an agency (GSD) in combination with a top-down effort starting at the NIRP Secretariat and with high level political commitment.

8.3.3 Impact

There has certainly been impact of the elaboration of maps, particularly with reference to the large mining companies. The larger companies know about the maps and can afford them. However, there are no maps accessible for the small and artisan miners or for use at the district level for planning purposes. In the World Bank project document there was a specific sub component addressing the small miners' access and use of maps. Any impact from this sub component or linkages into the GEUS support to GSD cannot be found.

Currently, the Commonwealth Secretariat – Price Waterhouse – are supporting the Head of Civil Servants to complete the revision of the scheme of services of the staff at GSD.

Table 14: Implementation of activities

Description of services Appendix A	Results as of end of project	Observations
Scope of work		
1. Careful formulation of GSD's "mission and vision statement"	Accomplished	
2. The preparation of a detailed plan of reconstruction. The plan must be clear in purpose and direction, specifying steps to be taken, and identifying goals, benchmarks and measurable performance indicators. The specific components of the plan will address the reorganization and build-up of the Geological Mapping Branch and Information sub-system within MSIS, Records Office, Library and Geological Repository, Central Drill Core Repository, mineralogical / petrological Laboratory and Central Seismic Station and Network. The plan will be presented for a review and discussion the MSDEP Co-ordinator	The internal restructuring of the GSD was achieved. However, in order to achieve a full restructuring, it is necessary to involve the Management Services Division and the Head of Civil Services. The scheme of services has to be redone and approved by higher authorities. The commonwealth Secretariat has financed the head of Civil Services to undertake the administrative task in 2008.	Key stakeholders in a restructuring process include: The Public Sector Management Reform Project (PSMRP) which was funded by World Bank and implemented between 1999 and 2003. The National Institutional Reform Program Secretariat (NIRP), which the focal point for public sector reform. Reference to the policies: "Ghana: Vision 2020" (1995) and the "Public Sector Re-invention and Modernization Strategy for Ghana: Transforming Vision into Reality" (PUSERMOS) Vice-President (VC) as the Chairman of the National Oversight Committee (NOC) to oversee all public sector reform. Key stakeholders should also have included such agencies as the Head of Civil Services, Ministry of Public Sector Reform, Ministry of Finance and Economic Planning at the out start of the restructuring process. They should have been part of the planning and implementation of the process. There is now a risk that the restructuring may not be approved. The involvement of a public sector specialist with experience from Africa would have addressed this issue more effectively.
3. Preparation of a detailed program for the Human Resources Development. The program will include, but not be limited to "on-job" training, formal in-house training, interdisciplinary training, re-training, and other professional capacity strengthening of GSD employees at all levels.	A diagnostic was made of the staff and substantial training	Subsequently, EU project took over, undertook a substantial and systematic review of all staff, and developed a manpower development plan
4. Overall assistance in the execution of the reconstruction plans for each of GSD's units.	Support was provided to all units. Emphasis was given to the Geological	

Description of services Appendix A	Results as of end of project	Observations
	Mapping & Information Management. The German Geological Survey project took over the support to the Information Management Division.	
5. Regeneration/reconstruction of the Geological Mapping Branch. The methodology envisaged for the execution of this task can be described as "on-job-training" of the Mapping Branch team with the following phases:		
Phase 1. Selecting areas for elaboration of modern geological maps	This was largely done. However. There are reports of the local counterpart funds not materializing and delays were reported of the field work. Also, it appears that the goals were not totally achieved as planned	
Phase 2. Defining and assembling the necessary infrastructure for the program; organizing the field crews		
Phase 3. Preparing preliminary draft of geological maps (in house).		
Phase 4. Fieldwork in critical areas. After each trip, the collected field observations are incorporated into the preliminary draft map.		
Phase 5. Final draft map is produced & digitised		
6. Preparation of a new GSD's Geological Mapping Manual	The manual was elaborated	The new EU funded project has built upon this first work done by GEUS
7. The preparation of a detailed program for compilation of mineral inventory of Ghana including information on mineral occurrences and deposits classified according to: - type defined by published or constructed empirical and conceptual models of ore deposits - age - economic potential of each type estimated on the basis of published grade-tonnage models and analogies with other deposits - size (identified mineral resources) This inventory should provide MC and the Ministry with a factual basis for rational estimation of Ghana's endowment with mineral resources, and thus facilitate the prognoses for the long-term development of the mining sector in Ghana	This management information system was initiated and conceptualized by NDF/GEUS	The EU funded project further worked and developed this system. It is still being developed.
8. Preparation of a detailed plan for the build up of the Geological Databank and Information System within MSIS	See above	
LONG TERM GOALS		
1. Fully functional Geological Mapping Branch which at the end of the training programme has produced two (2) modern geological map sheets in a scale 1:100,000, and which has a capacity to produce at least four map sheets per year in the future	Due to recurrent funding insecurity, not achieved	

Description of services Appendix A	Results as of end of project	Observations
2. GSD Geological Mapping Manual	This was achieved	
3. Fully functional minerological / petrological / chemical laboratory	The XRF equipment is installed and functioning. The equipment for the chemical laboratory arrived in 2002, but the laboratory needed to be refurbished prior to installation. The equipment has been put in storage awaiting the refurbishment of the laboratory.	
4. Fully functioning Records Office	This has been taken over by the German Geological Survey project	
5. Fully functioning data bank and Information sub system within MSIS	This was initiated and taken over by the EU funded project	

The desired impact was not achieved under the NDF financing and European Union continued support during the MSSP.

According to the Borrowers' Completion report from December 2007 the support of the TA led to the development of a field manual for geological mapping as well as the provision of equipment, such as XRF, and training of staff.

8.3.4 Sustainability

Institutional sustainability

The desired restructuring of GSD was not achieved during the NDF funding. It is questionable whether the targets as outlined in the Study on Institutional Arrangements – see above – are compatible with the public sector reform and the Ghanaian administrative national context. The study on Institutional Arrangements recommended the following:

Regulatory issues: the new GGS must be established by an Act of Parliament, but which its status and functions are specified.

As the GGS's future will be, at least initially, dependent on public funding, (no matter in which form), it is essential that the importance of the basic geological infrastructure for the sustainable development of Ghana is acknowledged by the MEM in a strategy statement, and enforced by the Parliament through the Act establishing the GGS, or through a special Law. Such Law would declare the establishment of a regular and systematic program of geological mapping of the Republic of Ghana, and allocate the necessary resources. The specifics of the program should be recommended by a "Geological Maps Advisory Committee", consisting of qualified representatives of the industrial and mining sectors, governmental institutions, universities, and other professional entities.

This same study highlights a so called "killer assumption", as follows: if Ghana's public demand, i.e. the need for basic geological infrastructure, is not endorsed by an Act of Parliament, the basis for the GGS will not exist as a logical consequence, and the reconstruction program would be rendered meaningless.

Furthermore, the NDF funded project operated without a high level steering committee, which has limited and outreach and dialogue with other decision makers, such as Ministry of Finance and Economic Planning, Ministry of Public Sector Reform, Office of the President, World Bank (public sector reform project) and others.

Financial and budgetary sustainability; macro economic stability, revenue generation and stability of commodity prices

The GEUS reports highlight the limitations to the financial issues at the institution as the major barrier²⁰:

Summary

The development of GSD into a modern Geological Survey is impeded by several major problems some of these are externally imposed on the GSD, while others are of internal nature. The most important 'external' impediments are the lack of sufficient funding and the poor remuneration of GSD staff.

The only way to improve this is for the GSD to become a semi-independent organization. Only then will the Survey have the possibility to generate funding for its core activities by providing services to outside organizations. Moreover, the Survey will have the option to adjust the number of staff to its actual needs, and allocate its economic resources freely for salaries, education, investment and services. A responsible Board will have the possibility to raise interest in the activities of the Ghana Geological Survey and to adapt its structure and activities to the needs of the Nation.

Important 'internal' problems are the poor level of education of the junior geologists; the lack of job satisfaction; and difficulties in retaining experienced staff. To increase the level of education among the junior geologists, it is recommended that the Survey introduces training courses within the Survey. This can be done in cooperation with the University of Ghana at Legon, as well as with international partners.

²⁰ GEUS: Final Report Mining Sector Development and Environmental Project – NDF Credit 156-14. adviser to the Director of the Geological Survey Department (GSD): page 22

Specific initiatives in GSD’s Division of Data Management have proved that good organization of the work, combined with well defined goals, can create a high degree of job satisfaction. The Survey would benefit from imposing similar initiatives in general. With high degrees of job satisfaction, it is likely that fewer members of staff will leave the Survey for other positions.

In the Inception Report the opinion was expressed that “if the status of the GSD is not changed, and sufficient funding is not forthcoming, then the present project would be futile”. This prediction has proved to be too pessimistic. With better funding much more could have been achieved, but even with the limited resources available significant progress has been made in geological mapping, GIS applications, database issues and human resource development. Furthermore, Mission and Vision statements were formulated, a new structure for the GSD developed and assistance given with the “Draft Geological Survey Act”, which at present is under review by the Ghana government.

The European Union provided support subsequently to the GSD, but the Ministry of Finance still provided very few resources. Currently, there is no sustainable mechanism for the financial sustainability of GSD.

8.3.5 Replicability

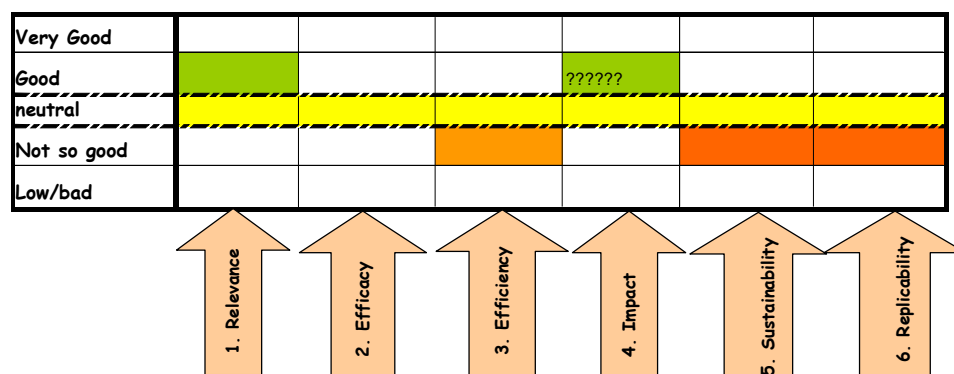
The desired objectives have not been achieved during the project. The EU’s MSSP has continued to support GSD. The project has undertaken Geological Mapping with the objectives of:

- Prospecting for new gold deposits to replenish depleting resources
- Potential diversification of minerals such as base metals, diamonds and industrial minerals
- Hydro-geological features to be reported to produce a comprehensive geological document
- Upgrade the Geological Survey Department (GSD) by providing additional geological infrastructure and hands on training to geologists
- Use of computer based mapping technology to construct lasting databases

Contractor for the project has been Council for Geoscience (South Africa) in association with BRGM (France) and Geoman (Ghana).

8.4 Rating of evaluation criteria

Fig. 4 SUMMARY EVALUATION CRITERIA
Component 4. Geological Survey Department



The support to GSD appears to be relevant. However, the ability to contribute sustainably to an improvement of the mining sectors performance is doubtful. Given the limited achievements during the NDF and the subsequent EU funded support, the high level TA and yet the limited sustainable impact on the GSD, gives a low score on efficiency. The sustainability is highly doubtful given the limited budgetary allocation to be expected from the MoFEP. This particular process is not recommended for replication.

8.5 Conclusions

World Bank: Project Performance Assessment Report: Ghana Mining Sector Rehabilitation Project (Credit 1921-GH) and Project Sector Development and Environment Project (Credit 2743-GH), July 1, 2003

At the Geological Survey Department the project funded a significant amount of airborne geophysical surveys, software, hardware, and consulting services²¹ for its interpretation. The latter work is still ongoing. The diagnostic studies of the GSD as an institution (also carried out under the project) concluded that it was moribund, in need of radical restructuring and that it should subcontract much of its technical work to specialized, outside firms. The GSD senior staff had a totally different philosophy and believed that in-house capabilities should be developed to do all the analytical work. The restructuring proposals were never accepted by GSD and neither the MC nor the ministry was in a position to impose change. In recent years the GSD has found its financial situation growing increasingly worse as funding from the MDF dried up and the Bank's project closed. It is still greatly overstaffed at the lower skill levels and its operating budget from MOF is inadequate for it to function effectively. The ID impact of the project on the GSD is rated as modest.

The project had a negligible ID impact on the supervising ministry (Energy and Mines) which was split into two ministries in mid-2002. The sector now has its own ministry for the first time, but unfortunately it is an empty shell. The split took place without planning or budgeting. At the time of the PPAR mission, it had no office space or its own and virtually no staff. The office equipment funded under the project had been retained by the Ministry of Energy. In these circumstances, the ministry is unable to play a substantive role in policy making and the minister has to rely on the MC for advice and guidance

Outcome

The project is assessed as moderately satisfactory in light of the project's continuing relevance and the substantial progress in its capacity-building objective

Borrower performance

The MC executed its project coordination role satisfactorily. Implementation problems with other sector institutions and conflicts over turf were not solely of its own making. However, it should have been more proactive in attempting to salvage the SSM component of the project.

GOG's performance is assessed as unsatisfactory because it did not provide proper sector leadership in general and specifically failed to impose a solution to the impasse on the reform of the GSD. Its decision to set up a new Ministry of Mines without any resources is not an example of good governance. Finally, the retention of MDF funds by the MOF is undermining the sector entities, undoing the gains of project and is politically short-sighted.

Overall borrower performance is therefore assessed as unsatisfactory.

8.6 Recommendations

The EITI process is bringing more clarity to the revenue flow of benefits from the mining sector operations and their use and application by the government. Annex 5. Describes in detail how the revenues are utilized. Annex 5 and the Figure 7 organization chart of the mining sector shows the GSD's dependency on financing from the Ministry of finance and Economic Planning. GSD has been "lucky" in the sense that EU has brought in more support subsequent to the NDF funding, but the budget assigned by the MoFEP is totally inadequate to provide for recurrent funds for the up keep of the agency. Without minimum funds, trained personnel will not remain and there will not be enough funds to up keep the investments in equipment and vehicles.

It is recommended to explore access to funds from the revenues generated from the mining sector operations – effective liaison with EITI, Chamber of Mines, MoFEP and others may provide such access. At any rate, donors that support GSD should assist in such lobbying

²¹ essentially funded by NDF, which also provided a resident TA adviser to the GSD

before any substantial investments are committed in order to be certain that investments are not “lost” for lack of recurrent allocations for operations and maintenance.

It is recommended to address and emphasize collaboration at the district level and inter-institutional collaboration. It is recommended that GSD pays more attention to provide affordable support and information also to the small and artisan miners. User-friendly books and pamphlets, targeted to all the range of stakeholders, should be produced as part of the information materials.

9. Consolidated conclusions/lessons learned

Lessons learnt from other relevant stakeholders are included below:

- Lessons Learnt from the Minerals Commission included in the Borrowers Completion report
- Lessons Learnt from World Bank: Project Performance Report MSDEP
- Lessons Learnt from World Bank: Public Sector Management Reform project. Specifically relevant for the restructuring efforts by GSD
- Lessons Learnt from this evaluation of NDF-financed components

9.1 Lessons learned from Minerals Commission

Lessons learned from Minerals Commission, NDF credit 156 Borrowers Completion Report, December 2007²²

Factors that Affected the Implementation of the Project

Conditions for Grant of NDF Credit: One of the major setbacks to the smooth implementation of the project is the NDF requirement that at least 60% of procurement of goods and services for the project should be of Nordic Origin. This delayed the procurement process and in some instances there was no option than to formally request the NDF for a waiver when goods or services of Nordic Origin could not be secured

Clearance of goods: Where goods were sourced from outside the country (for example the Braithwater tanks), the provision that NDF funds could not be used for payment of duties, taxes or costs associated with clearing the goods from the Ports delayed the project as cumbersome procedures for granting exemption had to be followed and provision for payment of associated costs for clearing the goods were not available.

Inadequate Funding: Finances provided for the project were grossly inadequate, making it impossible for the implementation of recommendations in the institutional study of other mining sector institutions apart from the GSD.

Sequel to the above, the inadequacy of funds made it impossible for the Project Implementation Team (PIT) to select bidders on the basis of the lowest evaluated bidder but rather selection was on the basis of bidder with lowest cost

Motivation of Project Implementation Team: As with other World Bank-funded projects, payment of allowances to serve as motivation or incentives for Project Implementation Team was non-existent.

Lessons Learned: Interaction with the Project Supervisor (MC) and other participating agencies highlighted lessons which are worth noting as follows:

1. The involvement of participating agencies in the initial formulation and design of the project proved very relevant and useful;
2. Project Implementation Team (PIT) relied heavily on the training in World Bank Procurement Guidelines in the execution of the project. In view of differences between the NDF and World Bank guidelines, additional training in the NDF guidelines would have facilitated project

²² Lessons learned captured from Minerals Commission: Borrowers Completion Report NDF 156, December 2007 pp. 12 - 15

implementation

3. Open line of communication and the establishment of a high degree of trust and confidence in the participating institutions and the NDF's supervision teams were critical in ensuring the successful implementation of the project, including visiting the field by the NDF team to physically inspect the infrastructure that has been put in place
4. the flexibility of the NDF especially in enforcing the 60% procurement of goods and services from Nordic Origin when it became clear that condition was not achievable also contributed towards the success
5. Trained, skilled manpower was necessary in the enhancement of sectoral agency goals. Without the trained and skilled manpower, the implementation of the project would have been seriously hampered

9.2 Lessons learned from World Bank: Project Performance Assessment Report²³

Future of Large-Scale Mining

Gold production has reached a plateau, the current level of exploration activity is low and total production will decline in the near term. Should this be a cause for concern to GOG? It is unclear what its true net benefits are to Ghana. Large-scale mining by foreign companies has a high import content and produces only modest amounts of net foreign exchange for Ghana fret accounting for all its outflows. Similarly, its corporate tax payments are low, due to various fiscal incentives necessary to attract and retain foreign investors. Employment creation is also modest, given the highly capital intensive nature of modern surface mining techniques. Local communities affected by large-scale mining have seen little benefit to date in the form of improved infrastructure or service provision, because much of the rents from mining are used to finance recurrent, not capital expenditure. A broader cost-benefit analysis of large-scale mining that factors in social and environmental costs and includes consultations with the affected communities needs to be undertaken before granting future production licenses.

Lessons learned

Numerous lessons of broader relevance for mining emerge from the experience of these two projects (Mining Sector Rehabilitation Project and the Mining Sector Development and Environment Project):

- Improving the legal and fiscal framework for private investors can be highly effective in attracting inflows of capital to the mining sector
- Legalization of artisanal mining is desirable but needs to be accompanied by measures to tax and control the environmental damage caused by such mining
- Gold mining projects need to be financially robust under very wide price fluctuations if the risk of losses is to be minimized
- Much more analytical work needs to be done on the socioeconomic issues relating to mine closures and the transition to sustainable, non-mining economic activities
- In countries with an unstable, non-convertible currency, gold and diamonds will always be attractive alternative stores of value and convenient vehicles for tax avoidance
- Financial autonomy for regulatory bodies such as the Minerals Commission is crucial for their effectiveness and sustainability. This can be assured through levies on mining companies and/or license fees, etc.
- Effective, transparent and equitable mechanisms to transfer resources back to communities affected by large-scale mining are essential socio-political tools to ensure that tangible economic benefits are felt by local people and that such mining has legitimacy in the eyes of the public
- Improving the productivity of artisanal mining is more complex than just the selection of the most suitable equipment. Financial and managerial arrangements for the dissemination and operation of machinery are equally crucial

The doubts expressed by the World Bank performance assessment is refuted by government as well as by the mining sector. The EITI initiative is very successfully contributing with clarifications and an improved transparency of the sector.

²³ World Bank: Project Performance Assessment Report: Ghana Mining Sector Rehabilitation project (Credit 1921-GH) Mining Sector Development and Environment Project (Credit 2743-GH), July 1, 2003

9.3 Lessons learned from the Public Sector Management Reform project

- A high level of ownership and commitment is critical for public sector reform. It is not possible to successfully implement a public sector reform project without complete ownership of and commitment to the program within government. The program must originate from within the Government and development and implementation of reform plans should be in active consultation with the targeted agency and its leadership. Where there are fiscal implications, the formal commitment of the Ministry of Finance should be a requirement.
- There is a need for strong evidence of political commitment and stakeholder support. Credible evidence of political commitment to the difficult aspects of the reform should be available at the time of appraisal. In the case of a change in government, continuation of the project (in this case, extension) should be subject to similar indications of commitment. Signals of credible commitment to such cross-cutting public sector reform can potentially come from three sources: (i) top level politicians and politically appointed bureaucrats; (ii) career (senior/middle level) civil servants; and (iii) citizens and civil society. This project relied on (i) whereas it might have been more prudent to have the support of at least two of these three sets of stakeholders. Finally, actions rather than statements of intent provide reliable evidence of commitment.
- Need to recognize the importance of political cycles. For difficult public sector reform projects, it might be a good idea to keep the project life within the life of the government. In any event, starting implementation such a short time before elections (about a year in this case) is not prudent.
- Choice of instrument. In most cases it might be too much to expect sustained commitment to reform over an eleven year period. Although, in the circumstances, the choice of the Adaptive Program Lending (APL) instrument mitigation this risk it might have been more prudent to test commitment with a 2-3 year pilot.
- The implementation and coordinating agency needs to have suitable authority. In a project such as this, the implementing agency should have sufficient authority and respect within the system to carry the project. The wider the scope of the project, the harder it will be to find such an agency within government.
- Keep the project focused. The scope of the project should be limited to components that are inter-related and within which there is a synergy. Widening the scope of the project in the absence of such synergies increases the implementation and supervision challenges with few compensating benefits.
- Linkages between components of a reform and the sequencing of those reforms need to be recognized at design and implementation stage. For example, the cross cutting (horizontal) reforms should ideally precede the institutional realignment and restricting (vertical) reforms providing a framework for the latter
- Appropriate monitoring and evaluation mechanisms are required to monitor the impact of the reforms. Confusion appears to have arisen in Phase I concerning the difference between monitoring and managing the implementation of reforms (monitoring inputs) and monitoring the impact of those reforms. M&E needs to cover the: (i) implementation of the individual restructuring plans; (ii) performance of the restructured entities; and (iii) overall impact of the reforms;
- For consultancy-intensive projects the supply side is of critical importance. The appraisal should have taken a more careful look at the availability of high-quality consultancy services as this was a critical input into the project, and the one that turned out to be a constraint.

9.4 Lessons learned from this evaluation

Each project component – achievements and limitations - has been assessed above and will not be repeated here. Conclusions and recommendations below will focus on the more strategic and management aspects. The reader is also encouraged to read specifically Annex 3 Stakeholders' seminars for comments from the stakeholders respectively on the project components.

NDF has supported strategic issues in the mining sector of Ghana. This funding mechanism has benefited the population and Government of Ghana as well as the Nordic companies. Several of them have established a further presence in Ghana on subsequent projects, such as the EC's Mineral Sector Support Program (MSSP).

A general conclusion is that the formulation of project interventions has been far too optimistic in achieving the goals. It appears that the initial linkages between NDF and World Bank have weakened during implementation. A more profound participation in the appraisal process jointly with the World Bank would have provided for considerably higher efficiency and probably solutions to a few sustainability issues, which are remaining after the implementation of the project (specifically the Prestea Water and Sanitation project).

Due to lack of application of LFA, the lack of a project Management Information System (MIS) with indicators/benchmarks and regular project progress reporting, and the absence of a high level steering committee, there is no effective mechanism whereby NDF may monitor the activities of the project satisfactorily. The evaluators have not had the opportunity to read any of MC's progress reports to NDF.

Financial sustainability: MC is a semi autonomous institution with its own revenue flow from sale of licences. This doesn't apply to the Geological Survey Department (GSD), which has serious problems with receiving adequate resources for recurrent costs. According to GEUS progress reports the project component at GSD has incurred reported problems with fielding of staff, due to lateness or no appearance of recurrent costs from the government. There are also subsequent problems with the upkeep, operations and maintenance of sophisticated and "State of the Art" technology in an environment which has a chronic shortage of recurrent budget and this is a problem which will not be resolved by more capacity building and training in the institutions. Governmental funds for the renovation of the laboratory arrived many years after the equipment was procured and arrived. Decisions made on expectations of budgeting and actual disbursements from the MoFEP and subsequent procurement of equipment should be accompanied with an examination of implications on the Governmental State Budget and be more realistic.

The NDF-funded projects are largely conceptualized as a transfer of "state of the art" technology from one country (industrialized) to another (developing, with a totally different country context). This has created over-optimistic plans and budgets, which are resulting in a lack of adequate institutionalisation and realistic attention to sustainability.

The anticipated "twinning" arrangement between GSD and GEUS have not resulted in the desired restructuring. The financial sustainability has generally not been resolved.

The PIT/PMU has not been effective in resolving and facilitating solutions to problems during project implementation.

10. Recommendations for the Future

In this project there are both positive as well as negative lessons to be learned. For future support, it is important to focus on those positive aspects, but take measures to mitigate the weaknesses elaborated on in this report in order to ensure that scarce resources are used optimally and that also a poverty reduction focus will be emphasized.

Ghana has progressed substantially on the Extractive Industries Transparency Initiative (EITI) and has a Mineral Development Fund (MDF) in existence. It is therefore recommended that future agreements and arrangements with the Ministry of Finance and Economic Planning may be explored to earmark financing from mining sector revenues which now flow into the general state budget, as well as the General Budget Support (GBS) funds (from amongst others the Nordic countries), that could be committed towards the required increases of recurrent costs which originate from project interventions. In addition, the new World Bank-funded project

Natural Resources and Environmental Governance (NREG) is using a basket-fund mechanism for the Ministry of Lands, Forestry and Mines (MLFM) which may be explored.

Regarding similar projects in the future, the following steps are recommended for strengthening implementation and management aspects:

- Consider establishment of a high level inter-ministerial steering committee to ensure good insertion in local political processes, cooperation with other institutions, and guidance of the intervention. In particular, institutional restructuring processes should not be undertaken without this high level support.
- This should include the application of Logical Framework Analysis (LFA), indicators and sources of verification and a suitable reporting format in order to report on project progress, highlight obstacles and suggested recommendations on way forward. The LFA would be useful for project formulation, project monitoring and reporting/evaluation, both for the project staff and the NDF.
- As a means to improve the implementation, it is recommended to employ a representative for NDF or an assistant paid by NDF as part of the PMU in order to co-administrate project funds, project activities and to contribute to timely resolution of any problems or conflicts arising during implementation. Such a person may share his/her time between a few of NDF's project in Ghana or on mining projects in different African countries.

Design of a training package for project management, containing – but not being limited to – the following elements:

- Assist with the institutional set up: strategic advice and capacity strengthening at the PMU; advice on the selection of a suitable steering committee with definition of responsibilities;
- Introduction and use of LFA, design of the LFA matrix with indicators and sources of verification, a pragmatic Management Information System (MIS) which underpins project progress reporting
- Project accounting – both the government and project loans budget and regular budget up dates. Any delays and/or obstacles with either funding resource should be clearly discussed, such that timely solutions may be found.

The co-financing mechanism between the NDF and the World Bank holds great potential for good results, with NDF finance used in areas that the WB cannot fund. However, a closer collaboration between the World Bank and NDF from start to finalization of activities will improve efficacy. Participation by NDF in the appraisal of the World Bank funded project is strongly encouraged. Jointly fielded evaluations will provide for stronger synergies and lessons learned to be shared between the two funding agencies. Joint supervision missions would further improve project management, and consistency and compatibility in the dialogue with government partners. Improved access by the NDF to project outputs, such as reports and studies would greatly improve efficiency, as the NDF will build a better understanding of the project's strengths and weaknesses, and it would permit timely provision of additional support, and avoid repetition of studies and other efforts.

As most activities addressing sustainable mining and environmental management will have to be addressed at the local government level, it is recommended to consider more focus of finance and technical support to regional and district level in the future. This would improve sustainability. The District Assembly will have to address many issues related to mining, resettlement, provision of public services and environmental management in the future, but they don't currently have the knowledge or the instruments to tackle these issues.

It would be beneficial, as a means to maximise the usefulness of the already funded activities, for the findings from key reports (such as Swedish Geological AB: Study of Mining Sector Institutional Arrangements, December 1997 and the "Sector Environmental Report" from 2001) to be integrated with suitable geological mapping to increase the knowledge of sustainable mining issues at district level. This would be a useful exercise and could be developed and coordinated with the Ministry of Local Government, Rural Development and

Environment (MLGRDE) and relevant donor funded projects, such as the GTZ Local Governance and Poverty Reduction Support Programme (LGPRSP).

There is a need for improved understanding of the Ghanaian institutional context, roles and responsibilities with respect to water supply and sanitation (if this sort of activity is to be supported in the future), as well as with the restructuring process. It is recommended to include an expert on public sector reform/change management in this type of project. For improved sustainability, institutionalization within these agencies and institutions is a requirement.

The consultant team recommend that the NDF continues supporting the mining sector. However, there is a need for more realism in the conceptualization of the projects - the identification and formulation process needs strengthening. The employment of a long term international expert at the PMU with the responsibility to address the development goals of project intervention is recommended. There should be a focus on artisan and small miners – poverty alleviation – and an understanding of the country context: move away from a policy with focus on private sector intervention towards a policy of greater focus on public sector participation and focus on small scale miners.

The consultants also recommend that the potential funding mechanism through the Mineral Development Fund should be made visible and transparent at the local government level. The Sectoral Environmental Review (SER) provides advice on issues related to water quality (iron, arsenic, pH and other issues) – information which should be made known to the district level authorities. The SER has elaborated a range of recommendations on studies and measures – the active involvement of local government in such assessments will provide for recognition and “ownership” of problems and future collaboration in mitigation of problems.

Other observations:

- Need to understand the policy and legal framework’s context and evolution over time, as well as the specific institutional arrangements in Ghana;
- Ensure an approach and vision towards economic growth *and poverty alleviation*. How can the project support, services and products be useful for the artisan and small miners? (it is a lost opportunity that this has not taken place during the NDF intervention)
- Ensure that there is proper phasing and sequencing of investments: laboratory and other equipment should not be procured prior to the building being refurbished and put in adequate state;
- Ensure that a suitable accounting system is set up and financial reporting is transparent and understandable/useful for decision making
- Have a realistic understanding and approach to government’s ability to respond (financially) to recommendations on hiring additional staff in order to respond to recommended institutional reorganizations.
- Have an understanding for public sector management, including the (potential) role of local government in sustainable mining and multi sectoral planning
- Coordination at the (provincial and (district) level of actions of the mining sector
- Consider support in inter institutional collaboration and conflict resolution (independent) attached to the Minerals Commission

Another general recommendation for the future – rather than focusing on high level scientific research the - focus more on how to address and assist the small and artisan miners to acquire mapping, knowledge and licences etc. It is suggested that a booklet in local languages is published in order to provide information on geology, maps and the licensing procedure to the small and artisan miners. Without inclusion of the full range of stakeholders, the overall objective of environmentally sustainable mining industry will not be achieved.

ANNEX 1

Terms of Reference

Annex 1. TERMS OF REFERENCE

NDF Ex-post Evaluation of NDF-156: Mining Sector Development and Environment Project (Cr.2743 GH), Ghana

1. BACKGROUND

**1.1 Title of the Project to be Evaluated:
NDF-156: Mining Sector Development and Environment Project, MSDEP
(Cr.2743 GH)**

1.2 Basic Project Information and Current State of the Project:

The Mining Sector Development and Environment Project, MSDEP (the "Project") was implemented by the Minerals Commission with financial assistance from the Nordic Development Fund (NDF) under Development Credit Agreement No. 156 dated 9 September 1996 for an amount of Special Drawing Rights (SDR) 4,000,000.

The Credit Agreement was signed in September 1996 and it expired on 31 December 2005. The NDF Credit Agreement was a co-financing agreement with the Government of Ghana with the same objectives as the Mining Sector Development and Environment Project, financed by the World Bank. The World Bank components of the project were completed by 31 December 2001, while the NDF-components continued until 31 December 2005.

The Project objectives were to support the sustainable development of Ghana's mining sector in an environmentally sound basis through strengthening the mining sector institutions and support to small scale miners to introduce the use of environmentally appropriate technology. The specific objectives of the MSDEP were i) to enhance capacity of mining sector institutions to carry out their function of encouraging and regulating investments in an environmentally sound manner; and ii) to support the use of techniques and mechanisms that will improve the productivity, financial viability and reduce environmental impact of small scale mining operations.

The NDF-components have primarily been **focusing four components:**

1a. Planning, design and supervision of the development and rehabilitation of i) water supply, storm water and sanitation systems to cover the heavily polluted Prestea area and ii) advisory Services and studies related to rural planning and community relocation in Tarkwa; 1b. Implementation of rehabilitation works in the Prestea area.

2a. Implementation of an airborne Geophysical Survey of selected areas covering 48,000 square kilometers or more; 2b. Processing of data from the Airborne Geophysical Survey, including supply of equipment and setting up processing unit in the geological Survey Department and training of staff

3. Technical assistance in implementing the recommendations of the institutional study to be performed under the MSDEP

4. Technical assistance in implementing the recommendations of the institutional study regarding the Geological Survey Department performed under the MSDEP.

The NDF-financing was to cover mainly the foreign exchange costs for works, airborne geophysical survey and international consultancy services. The Beneficiary government is represented by the Ministry of Finance and Economic Planning and the implementing partner is Minerals Commission. The implementation of the NDF-component of the project depended on

the structures that were created under the MSDEP. The Minerals Commission acted as the coordinating agency with the Ministry of Lands, Forestry and Mines, The Geological Survey Department, and the Inspectorate Division of the Minerals Commission (Mines Department) as participating agencies. The Commission liaised with the Environmental Protection Agency (EPA) in regard to environmental issues in the project.

In general, there has been a strong interest of Nordic companies in the project and a total of nine contracts have been awarded to Nordic companies and individual consultants while seven contracts have been made with local and international firms. Thus, the Nordic technical expertise has been applied throughout the project implementation and the project activities have been implemented with relatively minor difficulties.

2. DESCRIPTION OF THE ASSIGNMENT

➤ Overall Objective

The overall objective of the evaluation activities implemented under this contract will be to improve the impact of the NDF's managed credit agreement, by strengthening the NDF's and also the Borrower's ability to draw on lessons learnt from the past interventions.

➤ Specific Objective

The **specific objective** of the evaluation is to check on the achievements of the project, particularly with regard to **impact and sustainability of the various interventions** by the different project elements with emphasis on the NDF-project components. The evaluation will assess the level of success in addressing the raised issues and problems, and to evaluate the achievements and weaknesses of the Project in respect of **the five international evaluation criteria (relevance, efficiency, effectiveness, impact and sustainability)** taking account of **the particular situation of the project and the realities on the ground**.

The mission will therefore:

- Evaluate the project's performance with regard to its implementation and the achievement of the original objectives set out in the Credit Agreement;
- Document **lessons learned** concerning the Project design, implementation and management; and
- Propose **concrete recommendations** on how to further enhance and improve the **sustainability of the project components**

➤ Requested Services including Methodology to be Applied

The mission team will provide the following services:

- develop evaluation criteria and methodologies, questionnaires, interviews etc;
- present the findings to the Project's stakeholders after the discussions, meetings and visits;
- formulate recommendations to the Government of Ghana, NDF and other beneficiaries on all aspects of the Project management, **relevance, efficiency, effectiveness, impact and sustainability**;
- submit timely a high quality evaluation report in line with the specific objectives and specifications; and
- Draw the attention of the beneficiaries and NDF to any other aspects that the mission believes are relevant for the project's expected impact and sustainability.

In particular, the evaluation will have to consider the following main issues:

- Evaluate the project's performance with regard to its implementation and the achievement of the original objectives set out in the NDF Credit Agreement;
- evaluate the management of the project, in particular the internal evaluation and monitoring system of the project, visibility and dissemination of the project activities;
- **evaluate the achievements and shortcomings of the NDF-financed components and contracts**

- evaluate the effectiveness of the co-operation between the NDF and the implementing agencies in carrying out the Project;
- evaluate the project impact & sustainability and make recommendations on how to improve prospects of positive impacts, replication and sustainability;
- Summarize the achievements and shortcomings of the project, notably in view of measuring the improvements in the development of the Mineral Sector in Ghana.

➤ Requested Results

- The results of the evaluation mission are expected to advise the local counterparts, NDF and the project management office on **the lessons learnt of the NDF-component(s)**, including proposing **concrete recommendations** on how to **further enhance and improve the sustainability of the NDF-financed project component(s)**
- A comprehensive assessment of the project, **with focus on the NDF-component(s)**, presented in the form of a report which can be published at NDF's web-site and printed as an official NDF-publication.

3. EXPERT PROFILE AND MANAGEMENT

The evaluation team must be composed of *minimum one key expert who will be the Team Leader of the Evaluation*, while a number of other key experts - local as well as international - can be proposed for the assignment and in accordance with the requirements in the ToR. In this case, the exact composition of the Evaluation Team (i.e. the number of experts, responsibility and number of man-days) must be stated in the proposal.

The Team Leader will be responsible for the overall planning and implementation of the mission and for the production and a timely presentation of the final report.

The Team Leader's profile should meet the following requirements:

Qualifications and skills and specific professional experience:

- University degree in a discipline relevant to the scope of the assignment,
- Field experience relevant to the Terms of Reference,
- Substantial working experience with managing and/or implementing loan programmes/projects, preferably on the subject relevant to the ToR
- Substantial experience in international donor project evaluations; working experience as a Team Leader, preferably in the context of WB/ADB/NDF development cooperation and loan programmes/projects;
- Proven knowledge of technical and/or financial programme management as well as of Project Cycle Management and Logical Framework approaches;
- Excellent English language and communication skills;
- Proven ability to rapidly produce quality reports;
- Familiarity with Nordic-Ghana co-operation issues would be an asset; and
- Experience with similar programmes and/or relevant working experience in or with Ghana would be an asset.

For other proposed experts, it is also preferred that they have a university degree in a discipline relevant to the scope of the assignment as well as field experience relevant to the Terms of Reference. Also a substantial experience in project management and international project evaluations would be a strong asset.

The proposed experts must not have been directly involved in activities supported by the project. They must be self-sufficient in terms of equipment and communication (laptop, mobile phone etc.).

➤ **Role of the NDF Evaluation Management**

NDF will manage the Evaluation as regards funding, contracting and implementation management. The NDF Evaluation Manager will follow the evaluation throughout the process until the final report is completed and published.

The Evaluation Manager will:

- liaise on a regular basis with the Team Leader of the Evaluation Team
- Comment on and approve the draft and final versions of the proposed methodology, draft field and evaluation reports;
- Coordinate internal NDF-contributions (from Regional Managers and Management), including assisting in contacting to Government agencies, when required;
- Provide feed-back to the Evaluation Team;
- assist in organising, facilitating the evaluation workshops, field studies, as per appropriate; and
- Organise the presentation and publication of the evaluation results, and assist with the necessary follow-up of the Evaluation

➤ **Role of the Evaluation Team (Consultants/Experts):**

The Evaluation is carried out through a team lead by the Team Leader. In general, the Evaluation Team will:

- Carry out the Evaluation as per ToR;
- Be responsible for the findings, conclusions and recommendations of the Evaluation;
- Report to the NDF Evaluation Manager, be in regular contact, coordinate mission/field studies timing and key events with the NDF Evaluation Manager and seek his/her advise, when needed; and
- The Team Leader is responsible for the Team's reports and for the organisation of the work of the Team.

4. LOCATION AND TIMING

➤ **Activities**

It is expected that the evaluation shall include - at minimum - the following activities:

- Desk study at home/Preparation of mission, including consultations/interviews with NDF Evaluation/Regional Manager(s) and selected contractors
- Field visit in Ghana of minimum one week, including visits to selected project-sites.
- Preparation of mission report (draft final + final report) in home country

The mission will include in particular:

1. Review of background material and preparation of a tentative mission plan which shall be endorsed by NDF Evaluation Manager;
2. Briefing with NDF (before the field visit) and Minerals Commission (at the beginning of the field visit) to discuss the Project, the final methodology and tentative mission plan;
3. Interviews and discussions with the Minerals Commission staff and relevant counterparts and stakeholders including Ministry of Finance and Economic Planning, participating agencies etc.
4. Visit to and meetings with beneficiary institutions in Accra and project sites, as appropriate;
5. Interview and discussion with various beneficiaries in selected national ministries and institutions, including consultancy providers/Consultancy firms;
6. Debriefing at the Minerals Commission on preliminary findings and conclusions at the end of mission in Ghana; and

7. Finalisation of evaluation mission report at the expert's base by incorporating any additional comments from NDF and submission of the draft final report for comments or approval.

The exact timing of the (de)briefings will be agreed between the Evaluation Team and NDF Evaluation Manager.

The Minerals Commission is expected to provide logistical support (arrangement of meetings and visits, logistics and assistance as required), but logistic cost should be borne by the evaluation team (i.e. transportation, accommodation, laptop and private communication etc.).

During the desk study phase at the beginning of the assignment, the Evaluation Team is expected to read the following project documentation (if available):

- Credit Agreement;
- Progress Reports by the Implementing Agency;
- Mission and Mid-term Review Reports;
- NDF Project Ratings;
- Financial Management Reports by the Implementing Agency;
- Project Completion Reports by the Nordic Contractors; and
- Project Completion Report by the Lead agency, World Bank

➤ **Locations of assignment**

The main location of the assignment will be in Accra and also in selected project sites in Ghana (e.g. Prestea, Tarkwa)

➤ **Timing of the assignment**

The evaluation is scheduled to start during first quarter of 2009. It is anticipated the Draft Project Evaluation Report by the Evaluation Team shall be completed within 3 months after starting date. The tentative time table for the Evaluation is as follows:

<p>Phase I:</p> <ul style="list-style-type: none"> • Desk Study, Briefings/Meetings with NDF • Approval of meeting schedule, including preparation and arrangement of meetings with stakeholders on spot/location; • Approval of methodology and approach for the evaluation 	2 -4 weeks
<p>Phase II:</p> <ul style="list-style-type: none"> • Conduct Field Studies, • Meetings with stakeholders; workshop • Debriefing with Implementing Agency and Borrower and NDF 	2 weeks
<p>Phase III:</p> <ul style="list-style-type: none"> • Presentation of Draft Final Report after mission • Comments to Draft Final Report from Implementing Agency and NDF • Presentation of Final Report for publication 	1 1/2 months

5. REPORTING

The experts will have to produce the following documents and presentations:

- A proposed methodology before the briefing with NDF and a work plan at the start of the assignment shortly after the briefing with NDF;
- A summary of the mission findings at the final debriefing in Ghana;
- Debriefing presentation during the debriefing at the Minerals Commission and MOF;

- A draft final report, including comments from all stakeholders
- A final report with detailed annexes.

The final report will comprise a maximum of 50 pages excluding annexes. It will contain a self-standing executive summary. The reporting language will be English.

➤ **Submission of reports**

- Draft final report according to the comments made at the debriefing must be presented to NDF within 4 weeks after the field visit; and
- The revised final report based on the comments on the draft final report from NDF and Implementing Agency and Borrowers will be submitted 2 weeks from obtaining the comments.

➤ **Number of report copies**

An electronic version, one original and 3 A4 paper copies of the final report will have to be submitted to NDF.

6. ADMINISTRATIVE INFORMATION

During contacts with the authorities (implementing agency etc), or any project or Organization, the Consultants will clearly identify themselves as an **independent expert and not as official representative of NDF.**

ANNEX 2

Planning and Implementation Chart

Annex 2. Planning and Implementation Chart

FIG. 6. PLANNING AND IMPLEMENTATION SCHEDULE FOR NDF 156 MSDEP

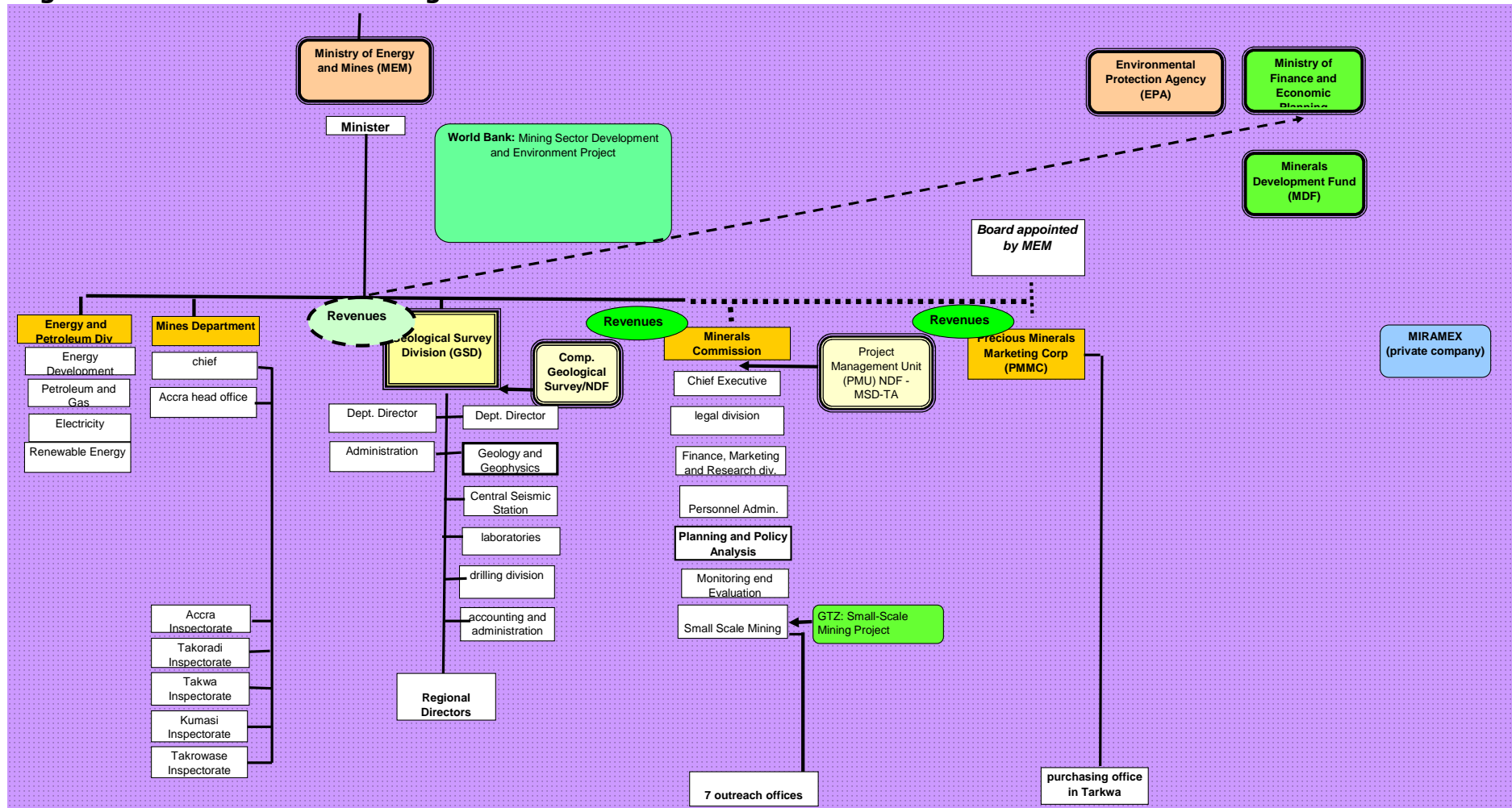
	1989-1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
WORLD BANK PROJECT 1: Mining Sector Rehabilitation Project	W.B 1																	
WORLD BANK Mining Sector Development and Environment Project	W.B 2																	
MSDEP Project implementation	Natural Resources																	
Swedish Geological AB: Final Report Study of Mining Sector Institutional Arrangements	and Environmental Governance																	
Project Performance and Completion Report	X																	
Project Preparation facility New World Bank Project	X																	
NDF MSDEP (1995 to 2007)																		
D-consult: NDF financing of Components of MSDEP																		
Contr. 11: Panason Ghana Ltd	X																	
Component 1: Prestea Water Supply and Sanitation																		
Contr. 10: VA Ingenjoererna AB	X																	
Review of Priorities - Prestea Water and Sanitation																		
Contr. 5. NORCONSULT: Planning, Design, Preparatin of Procurement Doc's, supervision of the expanded Water Supply and Improved Sanitation in Prestea, Ghyana																		
- Baseline Study Report and Strategic Plan																		
- Report on Additional Raw Water Sources																		
Contr. 4: Environmental Engineers, Ghana																		
Component 2: Airborne Geological Survey																		
Contr. 6: High Sense Geophysics Ltd																		
Contr. 13: GTK: Airborne Survey and Processing																		
Contr. 14: Geological Survey of Sweden: processing of data from airborne geophysical survey																		
Contr. 15: ICL Reiss& Co: PCs and accessories for processing of geophysical data																		

ANNEX 3

Institutional Set-up in Ghana's Mining Sector in 1997 - 2009

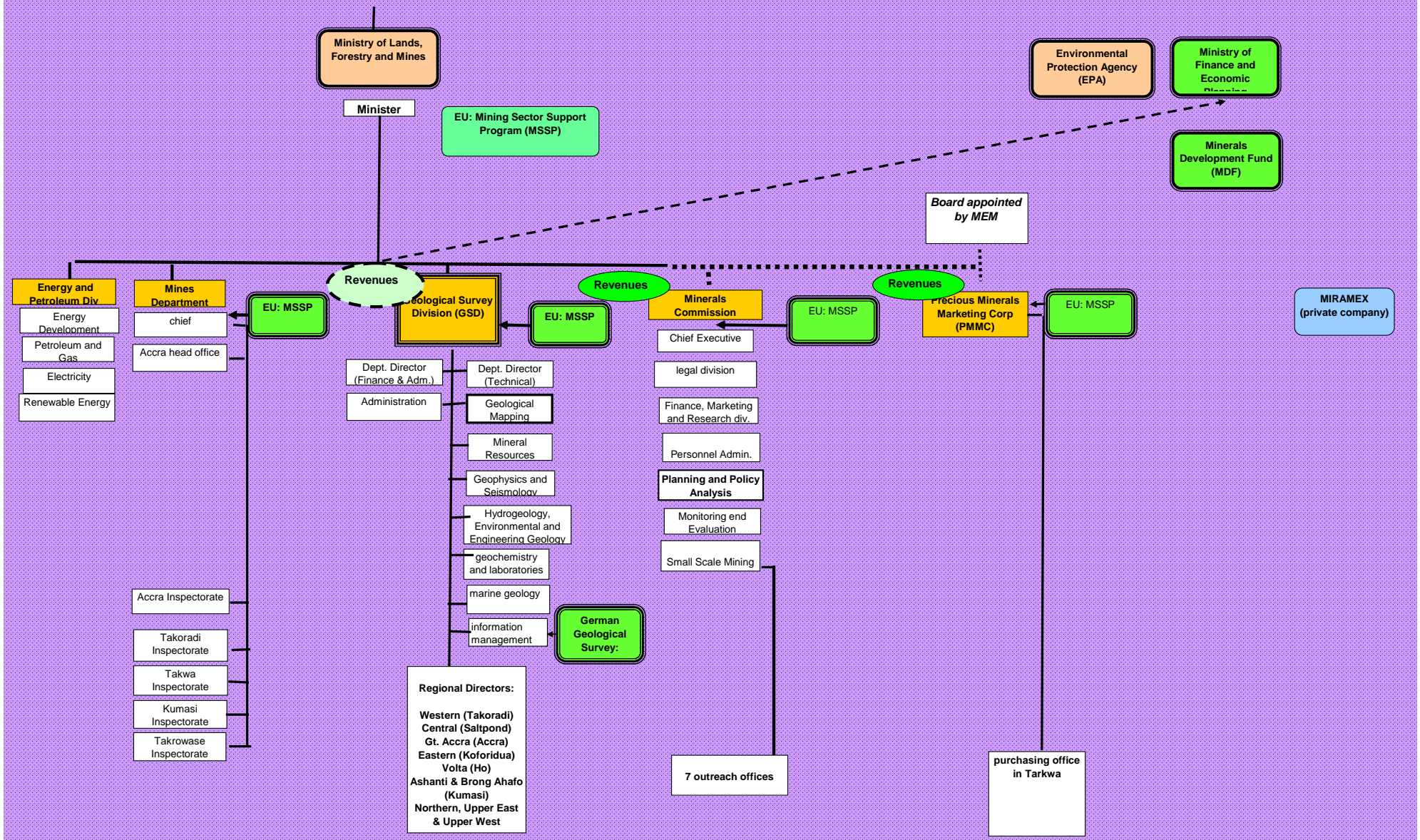
Annex 3. Institutional Set-up in Ghana's Mining Sector in 1997 and 2009

Organization chart of the mining sector of Ghana 1997



Note. It has not been possible to obtain official organization charts – this chart was elaborated by the consultant

Institutional Arrangements in 2009



Note. It was not possible to obtain official organization charts – this chart was prepared by the consultant

ANNEX 4

Stakeholder Seminars

Annex 4. Stakeholder Seminars

Stakeholder Meeting at Prestea Water Supply and Sanitation project, Ghana – lessons learned NDF funding of mining sector 1st May, 2009

Background

The NDF-components have primarily been focusing on the following issues of support under the Mining commission:

1a. Planning, design and supervision of the development and rehabilitation of i) water supply and sanitation systems to cover the heavily polluted Prestea area. It should be noted that the following activities identified in the Terms of Reference have not been addressed by the project:

1.a. Planning, design and supervision of the development and rehabilitation of i) storm water systems to cover the heavily polluted Prestea area and ii) advisory Services and studies related to rural planning and community relocation in Tarkwa; 1b. Implementation of rehabilitation works in the Prestea area.

Meeting objectives

The objective of the meeting was to capture lessons learned from key stakeholders in order to assess the achievements of the project, particularly with a focus on its sustainability.

Meeting activities

By applying a participatory methodology capture observations by the stakeholders. Stakeholder representation is critical and should be as diverse as possible.

Meeting participation

The meeting participated by representatives from cross section of various relevant stakeholders. The list of meeting participants is presented in below.

In this meeting participants from the Urban Water Board and water and sanitation users had an opportunity to discuss and share their views on lessons learned from the current state of the water supply and sanitation facilities. Recommendations by above all the Urban Water Board for sustainability and future were provided.

IMPACT	
Positive	Not so positive, Negative
Project Management Model	
	The water supply and sanitation project was implemented by ABP consultants and Environmental Engineers from Accra. The system was operated during two years by Environmental Engineers and subsequently handed over to the Urban Council for operations. In October 2008 the system was taken over by the Urban Water Board. Various deficiencies stemming from the planning and construction phase are mentioned below. It is felt that ABP were influenced by politicians, who later didn't want to pay fees
Project formulation and construction	
positive	Not so positive
Project formulation considered also an addressing of the storm water issues in Prestea, but appears to have been lost.	Storm water was not addressed by the project. The socio economic study missed the following: Lack of consultation before and during construction of water supply and sanitation: Water toilets and latrines were constructed by the hospital near the mortuary. People refuse to use them as they believe that there are ghosts there.

	<p>The best – and preferred toilets, i.e. water toilets Aqua Privy – have been located at a place where there is little demand Consultation was made through politicians Communities had preferred water toilets in all locations Political leaders influenced the location of the sanitary facilities and the water supply There is duplication between various systems:</p> <ul style="list-style-type: none"> • Ghana Water Works • Golden Stars Mining Companies system • NGOs and private systems <p>The smell of the latrines are partly due to the design of the model – it is not a good model</p>
A. Water supply	
Positive	Not so positive
<p>Before they had to carry water over long distances, and now they have improved access to non-potable water</p> <p>Instead they buy drinking water from Ghana Water Works or buy from other vendors</p>	<p>Current rates:</p> <ul style="list-style-type: none"> • UNICEF: .020 cedis per bucket • Ghana Water Works: .050 cedis per bucket • NDF/Urban Water Board: 0.020 cedis per bucket (previous rate) • 0.025 per bucket current rate <p>Golden Start supplied water for free and this undermined the charging of water fees.</p> <p>High iron content in water Water can be used for all purposes, except for drinking – due to the high iron content. Carbonic soaps cannot be used as clothes get stained Only OMO cleans clothes White basins get perorated and discoloured If water is left in a bucket for a long time, a yellow film is developed on the surface of the water There is plenty of sediment in the water and it is discoloured. There is a waste of water, as they have to flush the water pipes before clear water appears. As there often is a meter attached to the water source, this may increase the cost for the attendant and/or the user</p> <p>Women start their work in the homes at 5 in the morning and by that time the attendants are not yet there. So, they have to wait for a long time usually until 7 o clock.</p> <p>There is a lack of chemicals and treatment of water</p> <ul style="list-style-type: none"> • No access to filters • No access to a pick up/vehicle for operations/maintenance <p>Urban Water Board All members are not aware of the water test results</p>
Recommendations for future	
	<p>Want filters for cleaning the water from sediment and a pick-up /vehicle for operations and maintenance work</p>
B. Sanitation	
Positive	Not so positive
	<p>The situation is very UNSANITARY There is a lack of awareness on sanitation issues. It is difficult to discipline the children to use the latrines. There are many reasons for this: one is the lack of latrines of a size suitable for children At times the hand basins in the latrines are used for emptying buckets There are maggots in the latrines The main entrance is too small – it doesn't allow any ventilation. This provokes a terrible odour. Many people don't go to the latrine because of the stench. Some latrines were not equipped with water tanks. Many don't have the pipes into the water basins in the latrine. Some don't have the</p>

	<p>water basins at all. The population often use containers and often spread it outside They feel that the construction of the toilet are not suitable: the holes are too big and not suitable for children When children go to the latrine they often use "used" paper. Sometime attendants use hand for cleaning toilet paper buckets The low cost area has water toilets, which work better The use of polyethylene bags makes it difficult for the emptying vehicle to clean toilets. Currently they rent a private truck for emptying the toilets. They are not satisfied with this service, as it is often difficult to get services quickly enough, as it may be busy elsewhere Plastic containers are dumped into the chamber which makes it difficult for emptying There is a lack of chemicals and treatment of water and the latrines If latrines are not emptied in time, it "cakes" and becomes very difficult to clean again The urban council requested meters to the toilets, but they didn't get them</p>
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Recommendations:

The Urban Water Board wants a truck for emptying the toilets.

The Urban Water Board needs considerable strengthening in management – technical and financial – management of the system. There is little awareness and knowledge on how to manage the system.

When the system was operated by the private contractor Environmental Engineers, they left a substantial amount of money in the bank account, which was a result of the operations. This has now been depleted and debts accumulated.

The Urban Water Board has little understanding for financial management: responsibility for inherited liabilities, such as outstanding electricity bills from the former operator, i.e. Urban Council. As there is no solid financial analyses (after the analysis made in the formulation document) of the current situation, nobody knows the current financial sustainability. There is little understanding for affordability and capacity utilization in the case of procuring a truck.

It is recommended to undertake an independent study of the institutional arrangements (including alternative arrangement with Ghana Water Works, Urban Council etc), the financial situation and outline the capacity strengthening requirements.

Meeting participants

The Meeting Facilitators: Gunilla Goransson and Thomas Akabza.

Participants in Stakeholder Workshop Prestea – 1st of May 2009

Muntuni Neyohu, pump attendant
 Robert Baffeo Otebil, technical officer
 S.K. Biney, vice chairman
 S.S. Ampah, Accountant
 A.B. Achaampong, Secretary
 Alberta Kwofie, Unemployed (female water and sanitation user)
 Irene Ackah, unemployed (female water and sanitation user)
 Salahtu Ibrahim, unemployed (female water and sanitation user)
 Khadija Annan, unemployed (female water and sanitation user)
 Louse Ahmed, unemployed (female water and sanitation user)
 Abraham Aqua, unemployed (female water and sanitation user)
 Adamou Z-Altai, assembly member (cemetery Road)
 Emmanuel Ikins, revenue collector

**Stakeholder Meeting at Minerals Commission, Accra, Ghana
7th of May 2009**

**NDF Ex-post Evaluation of
NDF-156: Mining Sector Development and Environment Project (Cr.2743
GH), Ghana**

Draft Agenda for Stakeholder Meeting – lessons learned

Date:

Time: morning

Venue:

Background

The Mining Sector Development and Environment Project, MSDEP was formulated and financed by the World Bank. Nordic Development Fund (NDF) provided substantial co financing to this project, which was implemented by the Minerals Commission. The World Bank's support finished already in 2001, but NDF financing continued until 2005.

The Project objectives were to support the sustainable development of Ghana's mining sector in an environmentally sound basis through strengthening the mining sector institutions and support to small scale miners to introduce the use of environmentally appropriate technology. The specific objectives of the MSDEP were i) to enhance capacity of mining sector institutions to carry out their function of encouraging and regulating investments in an environmentally sound manner; and ii) to support the use of techniques and mechanisms that will improve the productivity, financial viability and reduce environmental impact of small scale mining operations.

The NDF-components have primarily been focusing four components:

1a. Planning, design and supervision of the development and rehabilitation of i) water supply, storm water and sanitation systems to cover the heavily polluted Prestea area and ii) advisory Services and studies related to rural planning and community relocation in Tarkwa; 1b. Implementation of rehabilitation works in the Prestea area.

2a. Implementation of an airborne Geophysical Survey of selected areas covering 48,000 square kilometres or more; 2b. Processing of data from the Airborne Geophysical Survey, including supply of equipment and setting up processing unit in the Geological Survey Department and training of staff

3. Technical assistance in implementing the recommendations of the institutional study to be performed under the MSDEP

4. Technical assistance in implementing the recommendations of the institutional study regarding the Geological Survey Department performed under the MSDEP.

The NDF financed project activities are now going to be evaluated by a team of two consultants, Ms Gunilla Goransson, team leader and Mr Thomas Akabzaa.

Objective of Workshop

The objective of the meeting is to capture lessons learned from key stakeholders in order to assess the achievements of the project, particularly with a focus on its sustainability

Activities

1. Review of the project activities and achievements, with specific emphasis on the NDF financed components in order to distinguish the World Bank's and NDF's specific contributions.
2. An interactive discussion of lessons learned from the project formulation and implementation
3. Options for the future

Suggestions of participants to be invited to the workshop (maximum 12-14 persons)

- Representative from Mineral Commission
- Project Manager of MSDEP
- Representative from the Water Supply and Sanitation project in Prestea:
 - Hara Mensah, Managing Director, Environmental engineers
 - Ing. A. A. Ogyiri, Deputy Chief Executive, ABP consultants, tel 021 773078
 - LT Col A.Y.K. Disu, Executive Director, The Golden Star, tel 0244323339

Representative from Ghana Water Company Limited

Representative from Community Water and Sanitation Agency

- Representative(s) from the Geological Survey Department (who were present during the project)
- Representative from the Ghana Chamber of Mines
- Representative from the EU mining sector project
- others

IMPACT	
Positive	Not so positive, Negative
Project Management Model Financial, technical, supervision of components, addressing sustainability of interventions	
	<p>Minerals Commission owns the water supply and Sanitation System. After completion the system was operated by Environmental Engineers, the contractor for about 2 years. Subsequently, the urban council "took over" the system for operations. From October 2008 the Urban Water and Sanitation Board "took over" the operations and maintenance.</p> <p>The Ghana Water Company and Community Water Department have been involved since the formulation of the project and throughout the construction for ad hoc discussions and advice.</p> <ul style="list-style-type: none"> - towards the end of the construction the water supply and sanitation model used by the Community Water Department was applied for operations and maintenance of the system - Ghana Water Company was removed as a potential operator at a specific time – but was not aware of the reasons - MC states that Ghana Water Company refused to take on the responsibility of operations and maintenance - illegal take over of facilities by Urban Council – misuse of faculties and resources - operations and maintenance a serious problem - the urban council should have been properly trained if they are planned to run the system - special interest groups have influenced the decisions - water supply systems are seen as "gold mines" for private business people

	There is considerable lack of clarity of roles and responsibilities of the stakeholders in the ownership, operations and maintenance of the water supply and sanitation system. There is "a lot of money to be made" on the operations and maintenance of systems.
Project formulation	
Positive	Not so positive
	<p>At the time of conceptualization it was to support the mining communities with potable water.</p> <p>Was a feasibility study elaborated, assessing the existing systems before the NDF funded scheme was put in place? Were different options assessed, such as</p> <p>Option 1: integration and extension of existing systems, owned and operated by the Golden Star Mine and the Ghana Water Company</p> <p>Option 2: integration and extension of one or the other of the existing systems</p> <p>Option 3. establishing a totally new and parallel system</p> <p>For example, when the mining operations close, what happens to the system?</p> <p>The original objective of the water supply and sanitation system was to benefit the mining community, but additional communities have been benefiting</p> <p>Self interest has been complicating the operations and maintenance of the systems</p>
Prestea Water Supply	
Positive	Not so positive
<p>Communities now have access to water – there is free flow of water and it can be used for many purposes: washing, cleaning etc.</p> <p>At the time of commissioning the system was functioning</p> <p>There was no iron in the water at the time of commissioning. The water was potable at the time of commissioning.</p> <p>There was initially an intention to let GWC to take over the system – this was however never followed through from the formulation through the construction and commissioning of the project. Towards the end of the construction, the model of the Community water department was applied.</p>	<p>There are sediments in water</p> <p>The aspects of assessing the quality of drinking water is not understood by the managers and operators: in this area Ghana Water Company and Community Water Department have expertise. It is necessary to assess colour, taste and chemical quality. The communities do not understand that it is not only the taste of the water which will underpin the quality. It is therefore difficult to work with the communities and ensure an understanding of what is potable and non potable water</p> <p>There is High iron content in the water, which makes it non-potable</p> <p>A long and heated discussion took place on the issue on iron content and very different observations and opinions were expressed.</p> <p>Already in the study Norconsult: Prestea Water and Sanitation Project: Report on Additional Raw Water Sources, January 2002; indicated that there was high iron content in one of the bore holes; no iron removal plant was installed;</p> <p>At the time of handing over of the water supply system, there were no indications of high iron content in water testing; however, samples taken in October 2008, show that there is high iron content in one of the boreholes</p> <p>Opinions on how to deal with the high iron content differed:</p> <ul style="list-style-type: none"> • Undertake a technical study in order to find the optimum solution • It is necessary to undertake a study to assess the concentrations and where the sediment comes from. • Install filters and alum <p>Ownership of the water supply and sanitation infrastructure</p>

	<p>Minerals Commission is the owner of the water supply and sanitation infrastructure. There has been a turbulent past of issues related to ownership and those responsible for the operations and maintenance of the systems. The system was 'taken over' by the urban council in Prestea; this was done in self interest and because some people saw an opportunity to make money.</p> <p>There are big problems with the social texture of Prestea. Many of the illegal miners rarely want to pay for services. Their work is seasonal, they will come and go and move in and out of the town and demand services at different times.</p> <p>Ownership should be spelt out</p> <p>There are 3 parallel water supply systems: MC-owned system, Ghana Water company's and Golden Star's systems.</p> <p>Tariffs Poor setting of tariff Revenue not adequate to pay for maintenance and operations costs, including electricity and chemicals etc Poor collection and management of tariffs – the attendants "keep" money Management has not been on top of vendors/attendees to the public services</p> <p>Population has increased in Prestea There are 3 existing parallel systems. Those owned/operated by Minerals Commission, Ghana Water Company and Golden Star mining company. But they are not integrated. What will happen to Golden Star's system the day the mine closes?</p> <p>The volume of water and alum quantity need to be assessed</p> <p>There should be a private operator to run the system and account to the Community Water and Sanitation Board (CWSB) – but, there is apparently no link further to accountability to the urban council and the district assembly.</p>
Prestea Sanitation	
Positive	Not so positive
	The latrines require constant and continuous attendance if they are to be operating well – this has not been the case.
Geological Survey	
Positive	Not so positive
<p>Minerals Commission identified and prioritized GSD as the recipient of NDF funding – doing this they reduced their own ability to use that funding for the Mineral Commissions itself.</p> <p>Elaboration of Geological Mapping which has been very useful GSD is not entirely dependent on government funding, but revenue which is generated has to be submitted to the Ministry of Finance Has successfully achieved the internal restructuring and setting up of the processing unit.</p> <ul style="list-style-type: none"> - trained a large number of persons – specifically geologists - supplied hard and soft ware; capture geological data in databases 	<p>Wants to restructure and become semi autonomous. This was initiated by NDF, but the process was not completed. Just recently were the Head of Civil Servants and the Management Services Department involved in the process?</p> <p>The restructuring of various divisions is still not complete.</p> <p>Recurrent funds not readily available for field activities. Often doesn't come on time and delays field work.</p> <p>The support to GSD from World Bank and NDF is loans to the government of Ghana and they will therefore have to be paid back by the public of Ghana.</p> <p>There is an urgent need to review the 1962 Act – there are many duplications with other more recent legislation and it is not functional for the GSD any more. The current law is not aligned with other laws.</p> <p>A proposal to the new Act has been elaborated.</p>

<ul style="list-style-type: none"> - set up of the GIS office - has gathered data to promote investment in the mining, water and petroleum sectors <p>A new organization chart which is very useful</p> <p>GSD provides a public service, which consists of valuable information to clients which reduces cost for them when assessing and making decisions on investments</p> <p>GSD has fared very well and is attracting a lot of donor support: World Bank, NDF, EU, Germany-Ghana Technical Cooperation projects (BGR)</p>	<p>Data needs to be packaged</p>
Airborne Survey	
Positive	Negative
<p>The XRF laboratory very useful to GSD. The laboratory very useful especially for regional geochemical sampling. XRF is operational and useful for GSD and other organizations such as the universities. It provides a unique service to the public.</p>	<p>It is not possible to retain some of the professional staff due to:</p> <ul style="list-style-type: none"> Lack of motivation of staff Low salaries Poor conditions of service

Conclusions and Recommendations:

Water supply and sanitation

There is disagreement between the participation on the best way forward and optimum ownership and responsibility for the operations and maintenance of the system.

We are told that a feasibility study has been made on assessment of the existing system and an assessment of different alternatives – costs and benefits of different options of the water supply and sanitation.

The consultants have had access to the following studies:

- Norconsult: Prestea Water and Sanitation Project: Report on Additional Raw Water Sources, January 2002;
- Norconsult: Prestea Water and Sanitation Project: Baseline Study Report and Strategic Plan, January 2002;

However, there is no mention of any feasibility study in these documents.

The current situation is that there are 3 systems which are non-integrated: Mineral Commission's, Golden Star and Ghana Water Company's. In addition, sometimes NGOs also provide systems, like UNICEF's standposts. There are serious problems with the operations and maintenance of Mineral Commission's system.

Feedback from Norconsult

Norconsult staff can't remember a feasibility study being made and there is no information of a feasibility report on the Norconsult server.

Regarding the serious problems noted with the operation of the Minerals Commission's (MC) system. From the progress reports it can be seen that MC did drag their feet in order to solve the problem of who was going to operate the system. Prestea Gold Mine "operated" the old run-down systems. There was a maintenance section at the PGM that took care of all mining

maintenance including water supply, when it broke down. No preventive maintenance took place, the way we would like maintenance to occur.

When PGM was taken over by Golden Star they made it clear that they were not interested in operating water supplies. This was spelled out to MC, which at this time had little influence over the new privately owned company (unlike the old days of PGM where MC had some influence). It would appear from the report that Golden Star are operating their own supplies. When we left they were of the opinion that they wanted to buy water from Ghana Water Company.

MC did little to solve the problem of operating the system after completion. Ghana Water Company did not have a good record in Prestea and Norconsult was not allowed to link the two systems, but only a few pipe lengths are required and the two systems can be linked up.

There were lengthy discussions with the community prior to deciding on the locations and types. Again the issue of maintenance has been problematic in the past and the district council that should provide tankers for emptying of latrines has continued to remain the main problem.

Recommendations:

Undertake an independent study of following:

- Undertake a projection of population growth and demand for water in the future
- Make an inventory of the assets and assess the technical problems with the MC owned water supply and sanitation system with recommendations on how to solve them in order to reach the objective of providing potable water to the communities
- Assess the institutional arrangement and ownership of the system and make recommendations on future sustainable mechanism – dialogue with and assess all relevant stakeholders: Minerals Commission, Prestea and Honeyvalley district assembly, town council, Prestea Water and Sanitation Board, Ghana Water company, community water department and others

Geological Survey Department and airborne survey

Following upon the support by NDF, EU followed up and continued most of the activities initiated by NDF. This was very positive for GSD, as this has provided a continuation and it has assisting in strengthening the sustainability of efforts which could not be completed under NDF's support. GEUS, who implemented the TA assistance under NDF was also retained for the EU funded activities. This has provided additional continuity.

A possible stronger emphasis on providing maps accessible to Small and artisan miners may be a future direction. An interface with local government and decentralization processes may be useful and strategic.

More information needed to small miners to know where they can have access to maps and simple language should be used

When addressing restructuring of public sector institutions, it is recommend to include a public sector expert with experience from African countries, in order to make the process realistic and in order to involve at an early stage the concerned agencies, such as Ministry for Public Sector Reform, Office of the President, Head of Civil Servants and Management Services Department, Ministry of Finance and others. Include a high level steering committee at an early stage with representative of the above mentioned agencies.

Consider funding booklets with information for small miners.

Financial analysis and assessment should be introduced: provide projections for future recurrent costs and make arrangements with Ministry of Finance in order to ensure future sustainability of very expensive investments

Government should work in partnership/collaboration with the private sector. Government should outsource to private companies some capabilities: it is not possible to train a database administrator and keep the person in public sector – instead government should contract this to the private sector.

Participants in Stakeholder Workshop Minerals Commission, Accra – 1st May 2009

Richard Afenu, Minerals commission

M.A. Appiagyei, chairman of Prestea Community Water and Sanitation Board

Albert Ogyiri, Director, ABP Consultants Ltd

Harold Essekli, Consultant, community Water and Sanitation Agency (CWSA)

Dr Daniel Boamah, Head of Geochemistry and Laboratories

Samuel K. Amedofu, deputy director administration

Sam Agyemany, Golden Star (GSRBPL), Underground Mining Project

ANNEX 5

List of Persons Met

Annex 5. List of Persons Met

ABP Consultants

Ing. A. A. Ogyiri, Deputy Chief Executive

Community water and sanitation agency

Ernest Kwame Doe, Water and Sanitation Systems Coordinator

Harold Esseku, Rafha Consult, previously with Community Water and Sanitation Agency

Dakgyeis Company Ltd

David Agyei

District of Prestea and Honey Valley

Alhaji J.M. Hardi, District Coordinating Director

George Trimpong, Environmental Health Officer

Environmental Engineers Ltd

Hara B.Mensah, Managing Director

George Agbenyoh, Planning Supervisor

Ghana Water Company

Asomani Kweku Nyarko, Planning Engineer

Michael Botse-Bsidoon, Planning Engineer

James Oteng Mensah

Geological Survey Department

John Ageyei Doudu, Director

Dr Daniel Boamah, Head of Geochemistry and Laboratories

Samuel K. Amedofu, Deputy Director Administration

Mining Sector Support Programme (MSSP) PMU – EU funded

Dr John Askbri, GSD representative in PMU

Michel Chapeyroux, Project Coordinator

Golden Star – mining company

Lt. Col. A.Y.K. Disu, Executive Director, Accra

Nigel Tamlyn, General Manager, Bogoso/Prestea Region

Former Ministry of Public Sector Reform

Nii Akwei Allotry, Acting Chief Director

Ministry of Finance and Economic Planning

Felix Nelson Amaoko, Nordic Fund

Minerals Commission:

B.N.A. Arysee, Chief Executive Officer

Richard Kofi Afenu, Manager Sectoral Policy and Planning

J. Okai Mensah, Principal Finance Officer

Daniel Moore Aprakuso, Internal Auditor

Jerry Ahadjie, Senior Planning and Policy Officer (Projects)

Orlands Kofi Teteleh, Principal Policy and Planning Officer

Prestea Urban Council

Paul Kwaku Asare, Clerk of Council

Prestea Urban Water Board

George Agbemyob, EEL

Adamu Z. Alhaji, Assembly member
S. K. Biney, Vice chairman
R. B. Otabil, Technical officer
A.B. Acheampong, Secretary
S.S. Ampah, Accountant
M.A. Appiagyei, Chairman

Participants in Stakeholder Workshop GST, Dodoma – 16th April 2009

Muntuni Neyohu, pump attendant
Roburt Baffeo Otebil, technical officer
S.K. Biney, Vice Chairman
S.S. Ampah, Accountant
A.B. Achaampong, Secretary
Alberta Kwofie, unemployed (female water and sanitation user)
Irene Ackah, unemployed (female water and sanitation user)
Salahtu Ibrahim, unemployed (female water and sanitation user)
Khadija Annan, unemployed (female water and sanitation user)
Louza Ahmed, unemployed (female water and sanitation user)
Ibrahim Aequah, unemployed (female water and sanitation user)
Adamu Z-Alhaji, assembly member (cemetery Road)
Emmanuel Ikins, revenue collector

Participants in Stakeholder Workshop Minerals Commission, Accra – 1st May 2009

Richard Afenu, Minerals Commission
M.A. Appiagyei, Chairman of Prestea Community Water and Sanitation Board
Albert Ogyiri, Director, ABP Consultants Ltd
Harold Essekli, Consultant, Community Water and Sanitation Agency (CWSA)
Dr Daniel Boamah, Head of Geochemistry and Laboratories
Samuel K. Amedofu, Deputy Director Administration
Sam Agyemany, Golden Star (GSRBPL), Underground Mining Project

ANNEX 6

List of Literature Consulted

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