NORWEGIAN ENVIRONMENT AGENCY

EIA database development for NEMA Uganda

System specification, version 0.5

Christian Haugland, Torstein Finnesand and Jostein Skaar

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1. Project description

The National Environment Management Authority (NEMA) is requesting assistance in improving its use of IT to support work processes dealing with project specific EIAs. Important goals are:

- Improve access to relevant data for the NEMA employees.
- Facilitate monitoring of the internal work processes.
- Improve access to relevant documents.
- Facilitate update of list of certified and registered EIA practitioners.
- Facilitate communication with external parties involved in the work processes, including other government authorities.
- Facilitate compliance monitoring.
- Strengthen capacity for providing information to the general public.

To achieve these goals there is a need to build a new system (database + application), by using modern IT-principles. The structure of the database and the design of the application will be based on:

- Ugandan regulations and guidance.
- Meetings in Kampala and Oslo.
- The existing EIA database.
- Feedback from the key prospective users of the system (by way of email).

The system will be developed in cooperation between NEMA and The Norwegian Environmental Agency. The main participants in the project are:

Margaret Aanyu	EIA coordinator	NEMA
Isaac I. G. Ntujju	Senior Environmental Inspector	NEMA
Kato Phillip	Network administrator	NEMA
Christian Haugland	System manager	The Norwegian Environment Agency
Torstein Finnesand	System manager	The Norwegian Environment Agency
Jostein Skaar	IT-Developer	The Norwegian Environment Agency

Other participants will also contribute, especially in giving insights regarding the EIA process and the different registrations made in the EIA database.

The development of the application will be done in steps.

The goal is to have a first version ready by June 2014. This first version will contain registrations of the first two steps defined below. In addition this version may also facilitate update of the table of all EIA practitioners that is approved by NEMA.

The application will be further developed, adding on new functionality, during the fall of 2014.

After the database is in place, the intention is that NEMA will take over the maintenance of the system.

2. Steps in the EIA review process

The EIA process is divided into three stages[1]; screening, EIA study and finally decision making. The process starts when NEMA receives a submitted project brief (PB)[2] from a developer. Project briefs are concise documents (20 pages) that should contain contact details of the developer, characteristics of the project and characteristics of the potential environmental impacts. A given PB is forwarded to the relevant lead agency (and other agencies with stakeholder interests) before the screening process starts.

[1] According to the "Guidelines for environmental impact assessment in Uganda" - 1997

[2] A summary statement of the nature of projects, its proposed environmental impacts and the likely environmental impacts and mitigation measures thereto.

2.1 Screening

The purpose of a screening process is to determine whether a project needs an EIS. If the project does not have significant impact on the environment, a certificate may be issued based solely on the Project brief. When the NEMA receives a PB, it will consult with the lead agency and other stakeholder agencies and the hearing process will result in one of two possible decisions:

1. The project is exempted from the requirement to undergo a full EIA. If this is the case a certificate can be issued.
2. The project is required to have to undergo a full EIA. This will initiate a scoping and submission of TOR (Terms of Reference) and finally an EIS.

2.2 EI Study

If a project is required to submit an Environmental Impact Statement (EIS), the developer needs to determine the scope of work to be done in the Environmental Impact Study (EIS) of the project. The EIS needs to be conducted by a third party, hired by the developer and pre-approved by NEMA. The list of approved practitioners can be obtained on the NEMA web site.
The developer will then submit a Term of reference (ToR) to NEMA. The ToR is sent to implicated lead agency, other stakeholder agencies and local governments for comments. If the ToR is accepted, the developer will conduct an Environmental Impact Assessment (EIA) resulting in an Environmental Impact Statement (EIS). This statement is then sent to NEMA for processing.

2.3 Decision

After the EIS is submitted, the EIS is sent on hearing to the lead agency and other stakeholder agencies and local governments. There can also be a public hearing depending on the magnitude of the project. NEMA then decides on whether the project in question will be approved or not. The processing of the EIS may have three possible outcomes:

1. Approved – the EIS results in a certificate
2. Rejected – the EIS is not approved and no certificate is issued
3. Disregarded

If a project is approved, the developer needs to pay a fee and provide an electronic version of the Environmental Impact Statement, before the certificate is issued.

3. The current EIA-database

3.1 Structure and data

NEMA already has a database for registering some information relevant for the EIA process. The structure consists of the following five tables (based on a copy received in December 2012), where data have been recorded:

- Proponent – includes data regarding registration of customer/developer.
- Project – the central table with information of project name and category.
- Location – registrations of project location including coordinates.
- EIA – information on dates and decisions.
- Consultant – information on hired consultants for different projects.

The field names and the number of data entries are shown below in Figure 1.

Proponent

Field	Number
idProponent	3095
TIN	0
PROPONENT	2921
BOXNUMBER	2607
TELEPHONE	1811
FAX	1451
EMAIL	1046
CONTACT_PER	1906

Project

Field	Number
idProjects	2903
Project	2903
CATEGORY	2903
Grade	0
PROJECTBRIEF	5
idLocation	2903
idEIA	2903
idProponent	2903

Location

Field	Number
idLocation	3093
DISTRICT	3037
COUNTY	548
SUBCOUNTY	705
PARISH	779
STREET	106
PLOT_NO	461
PHYSICAL_LOC	2914
X_CORD	71
Y_CORD	71

EIA

Field	Number
idEIA	3104
SUBM_DATE	2715
APPROVAL	2521
CERT_NO	2347
APPROV_DATE	2503
REMARKS	27
DECISION	135
APROV_COND	267
MITIGATION	6
EIA_STATEMENT	49
idConsultant	3104
APPROVEDBY	2155

Consultant

Field	Number
idConsultant	3106
FIRM	2700

Figure 1. The existing database tables indicating relations.

3.2 Re-use

The existing database has a flat structure between the tables. The consequence is that information is duplicated. Also, the information is often registered in different ways in different tables. In the *Consultant table* is for instance, the same consultant has been named in the following variants:

- "Gissat Environment Associate" 40 times,
- "Gissat Environment Associates, Environment & Development Management Consults, Plot 3334, UDC Close Off Kironde Rd, Muyenga, Tel./Fax 246-4141-267078/0772-403796, P.O BOX 21598, Kampala" 68 times,
- "Harriet Mujuni_Gissat Environment Associates" 20 times and
- "Gissat Environment Associates (Harriet Mujuni)" 13 times.

It would have been easier for NEMA to make use of the data if the consultants name were registered only once. Registering only once would save time as well.

The problem of multiple data registration appears in the *Proponent table* as well. For instance is "Warid Telecom Uganda Ltd" registered 398 times. The database should be designed in such a way that one registration of this kind of information would be sufficient.

Each project seems to have one location, and vice versa. We suggest therefore that a separate *Location table* should not be part of the new data base, and that fields concerning location should instead be stored in the *Project table*.

The main information on the *Location table* is District and physical location. District is vital and very useful information in the database. The table has 187 unique districts. The reason for this high number is that some districts (2 %) seem to include several names, like "Buliisa, Amuru & Nebbi" and different spellings like "Masindi" and "Masindia". It is probably better to register only one district for a project in the new database. When a project is located in several districts, it is probably most important to identify one district as the main district, register the project in this one. Alternatives for informing that the project is a cross-district project need to be considered and if necessary be decided.

71 locations have coordinates. It seems that coordinates were recorded at a late stage, since locations with a high ID number tend to have coordinates. We don't now the quality of the coordinates, but maybe they could be checked before they are eventually imported to (or registered in) the new database.

The *Consultant table* has different kinds of information in the same field. The field is called "FIRM" and examples are:

- "Biljoss Consultants: Dr. Anrew Muwanga; Dr. Natal Ayiga; and Prof. Gaddi Ngirane-Katashaya. Contact: Dr. Muwanga, Makerere University, P.O. Box 7062, Kampala. Tel: 256 41-541258"
- "Eddie Luyima (Eco & Partner Consult, P.O. Box 23989 KAMPALA Tel.: 256-077 669601); and Robert Kasande (P.O. Box 27955 KAMPALA Tel.: 077402993)"

We suggest that the new database has several fields for this information, - which would make it easier to check and use the information. We suggest that the fields should be more or less the same as the field Isaac Ntujju uses in his practitioners document. It is better to fill the new tables with information from Isaac's document instead of the information in the *Consultant table*.

The *Proponent table* has 2921 rows with information (name of organisations), although duplicated. Around 200 rows contain additional information (box number, phones, contact person) as well.

The *Project table* is the key table. Of the 2903 project entries, 2283 have information about proponent, EIA and Location.

The main question seems to be whether NEMA would find it useful to transfer those 2283 record to the new database. If yes, we can study the data somewhat more, - in order to conclude what has to be done to do that. If yes, one thing that has to be done, is to remove all the duplicates in the *Proponent table*.

4. Infrastructure and users

4.1 Infrastructure, application and hardware

NEMA needs a server to host the new database, web application and storage for uploaded documents (files).

It is proposed that the database will be based on MySql running on Linux Ubuntu and that the application will be coded in PHP. This solution is open source and will not generate a licence fee. Employing this kind of solution is also a well-known strategy in the system development community so it should be easy recruiting people for taking care of system maintenance and adjustments in the future.

The web application will also give easy access from outside of NEMA's domain[3].

NEMA needs scanners to digitize documents as well. We suggest buying three scanners, one for the Registry, one for scanning certificates and one large scanner for digitizing old EIA reports[4].

The database and web application will, for a period to be agreed, be hosted in the Amazon Cloud with support from the Trondheim office of the Norwegian Environment Agency (cf. the letter of approval, titled 8.1 Hosting database in the cloud, signed by the Executive Director of NEMA September 24, 2013).

Existing data needs to be "washed" before they are uploaded to the new database. This process will take time and will require the dedication of adequate resources. A solution could be to import most of or all the data and "wash" them in the new or upgraded database. Since there will be a lot of new fields that are not present in the old database, the import date will act as a trigger for mandatory fields. A consequence of this is that old data cannot have mandatory fields, whereas new registrations will.

[3] NEMA is currently establishing an office in the Graben area.

[4] The EIA reports are now being delivered by CD-rom, but old ones are archived as large documents.

4.2 Users of the system. Roles

NEMA estimates approx. 25 users of the system. These are staff involved in the EIA review process and follow-up work like compliance monitoring. They all have access to a computer. NEMA already has an active directory (AD) installed and in use. However, we foresee potential issues with integrating the AD in the new system because it's location in the "cloud".

Our suggestion is therefore to add a *User table* to the database to handle logon requests. An administrator will generate a password, but this password may be changed by the user.

A role is a right to enter or change data in one or several data fields. Different users will have different roles according to their tasks in the process. The following role structure can be applied:

Role number	Role	Amount
Role 1	Registry	43
Role 2	Coordinator	2
Role 3	Review	13
Role 4	Invoicing	3
Role 5	Decision	8
Role 6	Practitionar certificate	24
Role 7	Control	13
Role 8	System manager	6

Figure 2. The different roles with proposed names and how many fields available for the role.

In addition to the proposed roles, there will be created a Read-only role. This role can search and export data (most users may make use of this role and it may include visitors to the Library's EIA Centre at NEMA House).

A person may have more than one role.

5. The new database

5.1 Database model

At the moment, the new database contains fifteen tables (shown in 8.3 Database model). Some are support tables and some are considered main tables. Support tables contain information used for registration. Registration of new project data will be stored in main tables. All fields in the different tables are shown in Figure 3. The proposed tables are:

- 'projects' – contains information about the facility or activity that NEMA wants to regulate or control. A project has a location and is normally located in one district. A project belongs to one category.
- 'organisations' – contains information about the developer (company information). The table is connected to 'projects' with "a one to many" relation. One developer can have several projects, but a project can only have one organisation.
- 'audits_inspections' – contains information about the audits and inspections NEMA carry out. The table is connected to project. A project can have several audits or inspections.
- 'eias_permits' – contains information about the process ending up in (normally) issuing of a certificate, and probably the permits/licences as well. The table is connected to 'projects', 'documents' and 'practitioners'. A project can have several certificates (for instance if a factory wants to increase its production) and several permits. One certificate can have several documents, but only one project.
- 'documents' – contains information related to the different types of documents that NEMA receives. The table is connected to 'eias_permits', 'hearings' and probably 'audits_inspections'. Since there will

be different types of documents leading up to an EIA certificate, the information need to be stored in an own table.

- 'hearings' – contains information about the hearing process. The table is connected to 'document'.
- 'practitioners' – contains information about the EIA practitioners (the persons). The table is connected to 'practitionerCertificates' and 'eias_permits'.
- 'practitionerCertificates' – contains information about the certificates. The table is connected 'practitioners' since a practitionare can have several certificates. Could be two for each year.

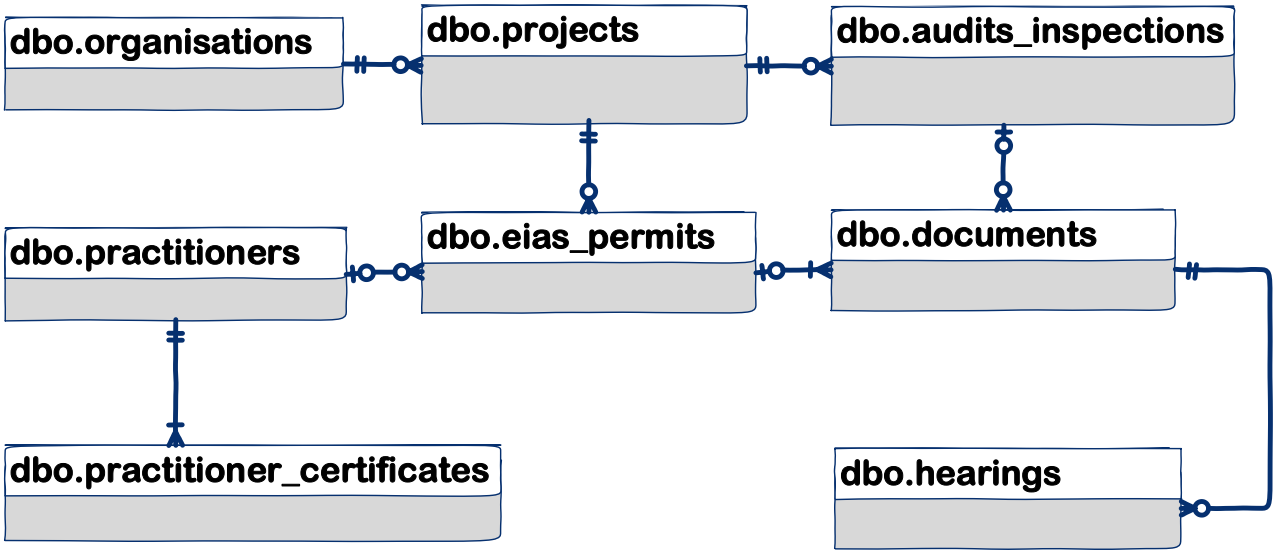


Figure 3. New database structure with relations.

Figure 4 shows the number of fields allocated to the different tables. A total of 146 data fields are identified, distributed in 13 tables. The tables are categorized in main- and support tables.

Tabletype	(Alle)
Tablename	**Number of dB fields**
additional_districts	3
documents	21
hearings	10
organisations	12
practitioner_certificates	12
practitioners	14
projects	13
team_members	3
users	9
districts	7
codes	6
audits_inspections	14
eias_permits	22
Total	**146**

Tabletype	main
Tablename	**Number of dB fields**
additional_districts	3
documents	21
hearings	10
organisations	12
practitioner_certificates	12
practitioners	14
projects	13
team_members	3
audits_inspections	14
eias_permits	22
Total	**124**

Tabletype	support
Tablename	**Number of dB fields**
users	9
districts	7
codes	6
Total	**22**

Figure 4. Total number of data fields for each table.

The main tables, with exception of the two small tables *additional_districts* and *team_member*, are shown in detail in following chapters.

5.2 The projects table

dB fields	Application fields	Data type	Roles
id	ProjectID	int	Role 1
title	Project title	varchar	Role 1
category_id	Category of project	dropdown	Role 1
location	Location name	varchar	Role 1
description	Address	varchar	Role 1
district_id	District	dropdown	Role 1
longitude	Longitude	decimal	Role 1
latitude	Lattitude	decimal	Role 1
has_industrial_waste_water	Discharge of industrial waste water?	bool	Role 1
grade	Grade	dropdown	Role 7
organisation_id	Organisation ID	int	Role 1
remarks	Remarks	varchar	Role 1
is_deleted	Delete project?	bool	Role 1

Figure 5. The project table with fields, proposed application fields, data types and associated role.

5.3 The organisations table

dB fields	Application fields	Data type	Roles
id	Organisation ID	int	Role 1
tin	TIN	int	Role 1
organisation_name	Organisation name	varchar	Role 1
visiting_address	Visiting address	varchar	Role 1
box_no	PO Box	int	Role 1
city	City	varchar	Role 1
phone	Phone	varchar	Role 1
fax	Fax	varchar	Role 1
email	Email	varchar	Role 1
contact_person	Contact person	varchar	Role 1
remarks	Remarks	varchar	Role 1
is_deleted	Delete organisation?	bool	Role 1

Figure 6. The organisation table with fields, proposed application fields, data types and associated role.

5.4 The audits_inspections table

dB fields	Application fields	Data type	Roles
id	Control ID	int	Role 7
year	Control Year	dropdown	Role 7
type_control	Control type	dropdown	Role 7
user_id	Control Officer	dropdown	Role 7
date_control	Date of control	date	Role 7
date_report_sent	Date report sendt	date	Role 7
recommendations	Recommendations	varchar	Role 7
follow_up	Follow up	varchar	Role 7
date_deadline	Company Deadline to verify that the deviations	date	Role 7
date_submitted	Date when NEMA receives information from the	date	Role 7
date_closing_letter	Date when NEMA closes the control	date	Role 7
remarks	Remarks	varchar	Role 7
project_id	Project ID	int	Role 7
is_deleted	Delete control?	bool	Role 7

Figure 7. The control table with fields, proposed application fields, data types and associated role.

5.5 The eias_permits table

dB fields	Application fields	Data type	Roles
id	ID of EIA&Permits	int	Role 1
project_id	Project ID	int	Role 1
teamleader_id	Teamleder	dropdown	Role 1
cost	Cost of the proposed development	int	Role 1
status	Status	dropdown	Role 1
user_id	The Officers assigned	dropdown	Role 2
inspection_recommended	Inspection before approval?	dropdown	Role 3
date_inspection	Date of inspection date	date	Role 3
officer_recommend	Recommendations by EIAO	varchar	Role 3
fee	Expected fees	decimal	Role 3
date_sent_ded_approval	Date sent for approval	date	Role 3
decision	Decision taken	varchar	Role 5
date_decision	Date for decision	date	Role 5
date_fee_notification	Date for fee notification	date	Role 4
date_fee_payed	Date invoice is payed	date	Role 4
fee_receipt_no	Fee receipt number	varchar	Role 4
designation	Designation of the one who signed	dropdown	Role 5
date_certificate	Date on the certificate	date	Role 5
certificate_no	Certificate number	varchar	Role 5
date_cancelled	Certificate cancelled date	date	Role 5
remarks	Remarks	varchar	Role 5
is_deleted	Delete Eia or permit?	bool	Role 5

Figure 8. The EIAPermit table with fields, proposed application fields, data types and associated role.

5.6 The documents table

dB fields	Application fields	Data type	Roles
id	DocumentID	int	Role 1
date_submitted	Date of submission	date	Role 1
sub_final	Final submission	dropdown	Role 3
code	Document code	varchar	Role 1
sub_copy_no	No. of copies submitted	int	Role 1
title	Document title	varchar	Role 1
type	Type of document	dropdown	Role 1
consultent	Consulting team for PB & TOR	varchar	Role 1
ded_copy_no	No. of to copies DED/D-EMC	int	Role 1
date_sent_ded	Date sent to DED/D-EMC	date	Role 1
eiac_copy_no	No. of copies to EIAC	int	Role 1
date_copies_eiac	Date copies sent to EIAC	date	Role 1
date_next_appointment	Date of next appointment	date	Role 1
date_sent_from_dep	Date sent to EIAC from the dep.secretary	date	Role 1
date_sent_eiao	Date sent to the EIAO	date	Role 2
folio_no	File and foliono.	varchar	Role 1
conclusion	Conclusion (PB/Tor accepted)	dropdown	Role 5
remarks	Remarks	varchar	Role 1
eia_permit_id	EIA	int	Role 1
control_id	Control ID	int	Role 1
is_deleted	Delete document?	bool	Role 1

Figure 9. The document table with fields, proposed application fields, data types and associated role.

5.7 The hearings table

dB fields	Application fields	Data type	Roles
id	Hearing ID	int	Role 3
lead_agency	Lead agencies	dropdown	Role 3
district_id	Local governments	dropdown	Role 3
date_dispatched	Date dispatched	date	Role 3
date_expected	Date expected for comments	date	Role 3
date_received	Date received comments	date	Role 1
recommendations	Summarized recommendations	varchar	Role 3
remarks	Remarks	varchar	Role 3
document_id	Document ID	int	Role 3
is_deleted	Delete hearing?	bool	Role 3

Figure 10. The hearing table with fields, proposed application fields, data types and associated role.

5.8 The practitioners table

dB fields	Application fields	Data type	Roles
id	Practitioner ID	int	Role 6
person	Name of the practitioner (person)	varchar	Role 6
tin	TIN	int	Role 6
organisation_name	Organisation name	varchar	Role 6
visiting_address	Visiting address	varchar	Role 6
box_no	PO Box	int	Role 6
city	City	varchar	Role 6
phone	Phone	varchar	Role 6
fax	Fax	varchar	Role 6
email	Email	varchar	Role 6
qualifications	Qualifications	varchar	Role 6
expertise	Expertise	varchar	Role 6
remarks	Remarks	varchar	Role 6
is_deleted	Delete practitionares?	bool	Role 6

Figure 11. The practitioner table with fields, proposed application fields, data types and associated role.

5.9 The practitioner_certificates table

dB fields	Application fields	Data type	Roles
id	Practitioner certificate ID	int	Role 6
practitioner_id	Practitioner ID	int	Role 6
year	Year issued	dropdown	Role 6
date_of_entry	Date of entry	date	Role 6
approved	Approved	bool	Role 6
cert_type	Type of certificate	dropdown	Role 6
number	Listed number	int	Role 6
cert_no	Certificate number	varchar	Role 6
conditions	Conditions	dropdown	Role 6
is_cancelled	Certificate cancelled?	bool	Role 6
remarks	Remarks	varchar	Role 6
is_deleted	Delete certificate?	bool	Role 6

Figure 12. The practitionercertificate table with fields, proposed application fields, data types and associated role.

6. Using the database in the process

6.1 Enter data

Many users will enter information into the database. Below we suggest the information that could be entered during the life of a project.

Registration:
The assistant receives the documents (project) and enters:

- Date of submission
- Document code
- No. of copies submitted
- Document title
- Type of document
- Consulting team for PB & TOR
- No. of copies to DED/D-EMC
- Date sent to DED/D-EMC
- No. of copies to EIAC
- Date copies sent to EIAC
- Date of next appointment
- Date sent to EIAC from the dep.secretary
- Teamleader
- Cost of the proposed development
- Organisation (TIN, Organisation name, Visiting address, PO Box, City, Phone, Fax, Email, Contact person)
- Project title
- Category of project
- Location name (Address, District, Longitude, Latitude)
- Team members

The EIA-assistant forwards documents to DEMC (and EIAC who forward to third parties)
(DEMC receive the documents and appends instruction notes. Documents are forwarded to EIAC (including submission letter). No registrations.)

Allocation:
EIAC receives the original copy with the submission letter and enters (in review chart (who have received documents))

- Date sent to the EIAO
- The Officers assigned

Review:
Reviewers receive the original documents. Provide own review comments.
Decision whether a project needs a full EIA (*Accepted/ Full EIA*)

a. PB is accepted and no EIA is needed, ref. Guidelines Annex 2.
b. A letter is written to the developer and they need to hire a consultant and conduct a full EIA, ref. Guidelines Annex 3. A <u>new</u> project has to be sent.

- Final submission
- Inspection before approval?
- Date of inspection date
- Recommendations by EIAO

- Expected fees
- Date sent for approval
- Lead agencies
- Local governments
- Date dispatched
- Date expected for comments
- Summarized recommendations

(Reviewers prepare review letter to lead agencies for review of EIA report. Add record of decision form)
(DEMC receive documents from reviewers for further review. Forwards documents to the ED's office for consideration.)

Decision:
ED's office considers the recommendation and decides on the project.

- Conclusion (PB/Tor accepted)
- Decision taken
- Date for decision

Fee payment:
A project is approved and invoice is created.

- Date for fee notification
- Date invoice is paid
- Fee receipt number

Certificate/rejection:
A certificate is issued by the ED's office.

- Designation of the one who signed
- Date on the certificate
- Certificate number
- Certificate cancelled date

Upload of documents:
EIAC uploads documents, including certificate, conditions for certification and any permit associated with it, to the dB.

- Type of documents (EIA report, PB, conditions, certificate and any permits associated to the EIA). The documents will be hyperlinked.

6.2 Process Status

A project starts with a PB, and often continues with ToRs and EIS, and subsequent decisions and fee payment. It is a long process. We suggest that the system may indicate the status of each project, - showing where the project is in this process.

The application should automatically identify the status of the EIA-process. That means that the application uses the information in certain fields to identify the status.

Our suggestion is shown in Figure 13.

Id	Status	Criteria 1	Criteria 2
1	PB received	PB	DateSubmitted
2	PB sent to DED	PB	DateSentDED
3	PB sent to EIAC	PB	DateSentFromDep
4	PB assigned	PB	DateSentEIAO
5	PB sent to LA	PB	DateDispatched
6	PB conclusion	PB	Conclusion
7	TOR received	Tor	DateSubmitted
8	TOR sent to DED	Tor	DateSentDED
9	TOR sent to EIAC	Tor	DateSentFromDep
10	TOR assigned	Tor	DateSentEIAO
11	TOR sent to LA	Tor	DateDispatched
12	TOR conclusion	Tor	Conclusion
13	EIS received	EIS	DateSubmitted
14	EIS sent to DED	EIS	DateSentDED
15	EIS sent to EIAC	EIS	DateSentFromDep
16	EIS assigned	EIS	DateSentEIAO
17	EIS sent to LA	EIS	DateDispatched
18	Project Recomondations ready	DateSentDEDApproval	
19	Project Decision	DateDecision	
20	Invoiced	DateFeeNotification	
21	Invoice paid	FeeReceiptNo	
22	Cert, issued	CertificateNo	
23	Cert cancelled	DateCancelled	

Figure 13. The different process status and criteria that trigger them.

Examples:

- If an EIA work-process of a project is at the stage where the EI Study has just been received, the Status is set to "EIS received".
- If an EIA work-process of a project is at the stage where payment has been received, but a certificate has not yet been issued, the Status is set to "Invoice paid".

Status (Id) number

6.3 Support tables

In order to keep the quality of data input as good as possible we introduce different dropdown lists from which to choose data values from. We categorize them for different use, but some can be used in different part of the process. Examples are dropdown lists with value "Yes" and "No" that can be made available in different fields. Also values in the table 'District' (which is considered a support table) can be used in a dropdown list for adding location information on a project and for adding information regarding the results of hearings at local government level.
So, we will use information in so called support tables to create dropdown lists in the application.
Some of the lists will be created using major tables as for instance 'District', 'Practitioner' and 'LeadAgencies', but some dropdown lists are only values to track the flow in the process. These values will be created in a separate table called 'type_codes'.
The different values and the structure are shown below in Figure 14.

Id	Description1	Description2	Value1	DropDownList
1	Approved			Decision
2	Rejected			Decision
3	Disregarded			Decision
4	Re-submitted			Submission
5	Final submission			Submission
6	Considered for EIA			Consequence
7	Likely exemptet from EIA			Consequence
8	EIAC	Environmental Impact Assessment Coordinator		job_position
9	EIAO1	Environmental Impact Assessment Officer no 1		job_position
10	EIAO2	Environmental Impact Assessment Officer no 2		job_position
11	EIAO3	Environmental Impact Assessment Officer no 3		job_position
12	PB	Project Briefs	21	Project type
13	EIATOR	TORs for EIA	14	Project type
14	EIA	EIA Reports	30	Project type
15	EATOR	TOR for EA	14	
16	EA	Audit Reports	21	
17	App. forms	Application forms		
18	Other			
19	PB received			EIA Status
20	PB sent to DED			EIA Status
21	PB sent to EIAC			EIA Status
22	PB assigned			EIA Status
23	PB sent to LA			EIA Status
24	PB conclusion			EIA Status
25	TOR received			EIA Status
26	TOR sent to DED			EIA Status
27	TOR sent to EIAC			EIA Status
28	TOR assigned			EIA Status
29	TOR sent to LA			EIA Status
30	TOR conclusion			EIA Status
31	EIS received			EIA Status
32	EIS sent to DED			EIA Status
33	EIS sent to EIAC			EIA Status
34	EIS assigned			EIA Status
35	EIS sent to LA			EIA Status
36	Project Recomondations ready			EIA Status
37	Project Decision			EIA Status
38	Invoiced			EIA Status
39	Invoice paid			EIA Status
40	Cert, issued			EIA Status
41	Cert cancelled			EIA Status

Figure 14. Dropdown lists with values.

We add some additional information in this table as well. The column 'Value1' show the different deadlines for the project types.
So the table consist of an ID, short name, long name, additional information and the name of the dropdown list.

The User table will function as a support table. This table will contain information regarding logon to the system.

dB fields	Application fields	Data type	Roles
id	User Id	int	Role 8
initials	Initials	varchar	Role 8
full_name	Full name	varchar	Role 8
job_title	Job title	varchar	Role 8
job_position	Job position	dropdown	Role 8
email	email	varchar	Role 8
password	Password	varchar	Role 8
is_passive	Is the user passive?	bool	Role 8
is_deleted	Not use this user any more?	bool	Role 8

Figure 15. The User table with fields, proposed application fields, data types and associated role.

7. Follow up

Things to consider …

7.1 Documents

Although the different documents linked to each project should be signed in the different steps of the process, it is functional to have documents available electronically. In this way different case workers could view documents at different steps in the process. For historical reasons it is also user friendly to have access to documents through the EIA database system.

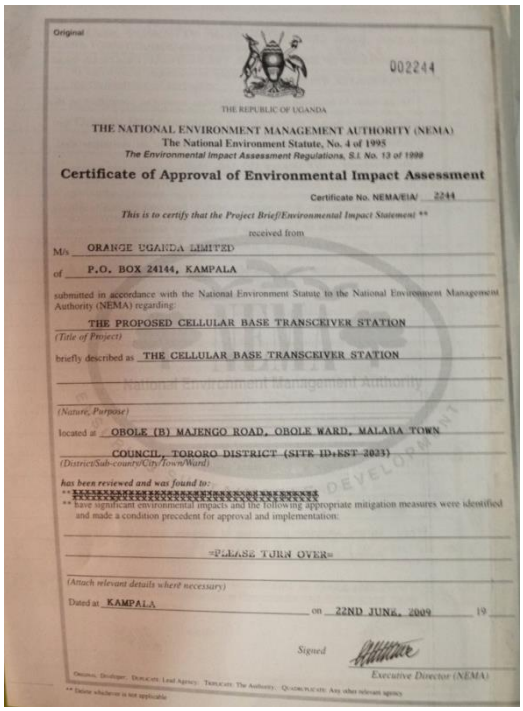
To gain easier access to documents it is necessary to scan them. This will provide a digital copy available in the system. Documents will be uploaded to a file structure on the same server as the database in the "cloud". The upload will be either directly in the application or through a FTP server.

By use of a FTP server it is possible to upload documents every night to avoid use of bandwidth during the daytime.

Documents will be accessible from the system using a hyperlink that is generated by the application.

The following documents could be scanned and made available:

- Certificates + conditions (about 10 pages)
- Permits (up to 15 pages)
- Inspections (up to 15 pages)
- Audits (up to 15 pages)
- Letters from the lead agencies (up to 15 pages)
- Old EIA-reports (large documents!)


Original

002244

THE REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
The National Environment Statute, No. 4 of 1995
The Environmental Impact Assessment Regulations, S.I. No. 13 of 1998

Certificate of Approval of Environmental Impact Assessment

Certificate No. NEMA/EIA/ 2244

This is to certify that the Project Brief/Environmental Impact Statement **

received from

M/s ORANGE UGANDA LIMITED

of P.O. BOX 24144, KAMPALA

submitted in accordance with the National Environment Statute to the National Environment Management Authority (NEMA) regarding:

THE PROPOSED CELLULAR BASE TRANSCEIVER STATION
(Title of Project)

briefly described as THE CELLULAR BASE TRANSCEIVER STATION

(Nature, Purpose)

located at OBOLE (B) MAJENGO ROAD, OBOLE WARD, MALABA TOWN COUNCIL, TORORO DISTRICT (SITE ID:EST 2023)
(District/Sub-county/City/Town/Ward)

has been reviewed and was found to:

** [redacted]
** have significant environmental impacts and the following appropriate mitigation measures were identified and made a condition precedent for approval and implementation:

=PLEASE TURN OVER=

(Attach relevant details where necessary)

Dated at KAMPALA on 22ND JUNE, 2009 19

Signed

Executive Director (NEMA)

** Delete whichever is not applicable

Figure 16. Certificate with number, watermark and signature issued by NEMA.

The issuing of a certificate is the final step of the EIA review process. Certificates are created with a typewriter using a special paper with watermark. The paper also have preregistered certificate number. The certificate is scanned for electronically archiving.

The system could generate the certificate, but then it would be without preregistered number, watermark and signature. Probably better to scan the original document and upload it to the database.

After upload the certificate will be available to users through a hyperlink.

7.2 Permits

A project could have several permits, some of the given by NEMA. Information about the permitting process could hopefully be recorded in this new database. How best to do that depends on whether there are similarities between the EIA-process and the permitting process. If, for instance, the permitting process includes documents, hearing and fee payment, the main table could probably be reused.

7.3 Audits done by the project (the organisations)

At the moment, we do not have enough information to identify how this process should be recorded in the database.

8. Appendix

8.1 Hosting database in the cloud

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

NEMA House
Plot 17,19 & 21, Jinja Road.
P.O.Box 22255, Kampala, UGANDA.

Tel: 256-414- 251064, 251065, 251068
342758, 342759, 342717
Fax: 256-414-257521 / 232680
E-mail: info@nemaug.org
Website: www.nemaug.org

NEMA/2.6

September 24, 2013

Ms. Frank Eklo
Norwegian Environmental Agency
Norway.

RE: HOSTING THE OIL AND GAS DATABASE WITH AMAZON CLOUD COMPUTING.

On August 28, 2013, Albertine Graben Environmental Monitoring Plan Steering Committee met to kick-start the Albertine Graben Monitoring Plan. This was to plan for the activities for years 2013 and 2014. Among these activities is the development of the clearing house web portal for oil and gas.

The projects that shall be hosted on this portal will include;

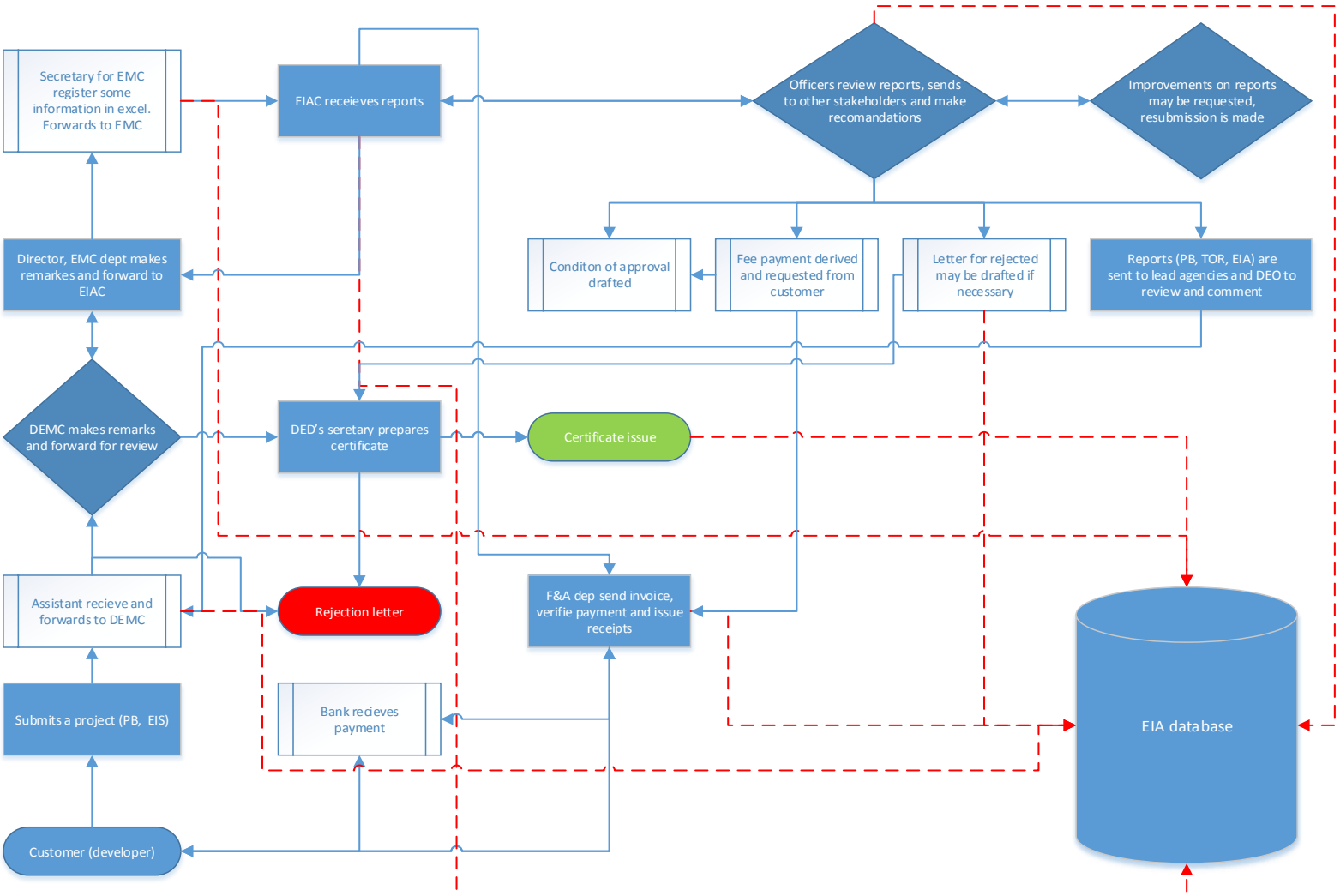
- Strategic Environmental Assessment of Albertine Graben;
- State of Uganda Environment Report;
- AGEMP – Albertine Graben Environmental Monitoring Program;
- Sensitivity Atlas;
- Environment Impact Assessment and Document Management System.

It was agreed that we host this portal with the Amazon Cloud Computing. All costs involved will be paid by Norwegian Environmental Agency, Norway. When the project closes, we shall be at liberty to transfer the data and host it together with our website.

This letter is purposely written to give you a go ahead to create the domain and start hosting the files with the foresaid service provider.

Dr. Tom O. Okurut
EXECUTIVE DIRECTOR

8.2 Process description



8.3 Database model