

NILE BASIN DECISION SUPPORT SYSTEM

FINAL REQUIREMENT ANALYSIS AND DSS DESIGN REPORT

ANNEX C: Training Needs Assessment

Vienna/Austria, Addis Ababa/Ethiopia, 17 March 2008



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NEEDS ASSESSMENT AND CONCEPTUAL DESIGN OF THE NILE BASIN DECISION SUPPORT SYSTEM CONSULTANCY

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Appendix C1 - Detailed Country Specific Results

Versions	Submitted
Draft Annex C	10 January 2008
Draft Final Annex C	29 February 2008
Final Annex C	17 March 2008

Acronyms

DSS	Decision Support System
NBI	Nile Basin Initiative
GIS	Geographic Information System
XML	Extensible Markup Language
GML	Geography Markup Language
SQL	Structured Query Language
IWRM	Integrated Water Resource Management
WRPM	Water Resource Planning and Management

1 Introduction

The Training Needs Assessment was carried out during the Stakeholder Consultation Missions in the nine countries. The Assessment had a national focus in the light of a regional DSS, and therefore has been carried out at national level.

The objectives of the Training Needs Assessment were:

- Assessment of the existing skills in the nine countries
- Assessment of the relevance of the proposed training modules and training contents for the nine countries on a country specific basis
- Identification of the Training Needs for further development of the training plan
- Development of comprehensive data and information to be discussed with the Client during the Sub-regional Workshop in Entebbe in order to reach agreement for the development of the training plan

This Annex is divided into the following chapters:

- Methodology for the Assessment of the Training Needs
- Results from Stakeholder Consultation
- Summary of Training Workshops
- Outline of Training Plan
- Appendix C1 with the detailed results of the institutions to be trained and the needs assessment

This Annex shall serve as a basis for further discussions with the Client for the determination of the general outline of the Training Plan to be developed in the Synthesis Phase.

The Training Needs Assessment was carried out at national level only. At the two Sub-regional Workshops in Addis Ababa and Entebbe it was not part of the consultations. The Training Needs Assessment was carried out by different teams in different countries:

Table 1.1 Countries and Teams

COUNTRY	TEAM MEMBERS
Ethiopia	Hartveld, Nachtnebel
Sudan	Hartveld, Nachtnebel
Egypt	Abu Zeid
Rwanda	Schuen, Dreher
Burundi	Schuen, Dreher
Kenya	Schuen, Riddell
Tanzania	Schuen, Riddell
Uganda	Schuen, Riddell
DR Congo	Schuen, Seidelmann

2 Methodology

The methodological approach applied in the Stakeholder Consultations was guided by the following principles:

- **Participation of the stakeholders**

In this sense the stakeholders themselves were asked to assess (i) the relevance of the proposed contents and training modules and (ii) to indicate the level of skills already available in their countries. The results therefore represent strongly the national view and provide ownership of the results to the stakeholders.

- **Qualitative integration of all individuals**

The questionnaires which were distributed to the participants were elaborated in break-out working groups. The break-out groups were composed of four to seven individuals in each country. This strongly enhanced the active participation of every single individual. In respect to the individual questionnaires the following qualitative advantages, in respect to other forms of discussions, could be achieved:

- Individual questionnaires give only individual views and interests and do not include a broader, cross sectoral and country wide perspective.
- Plenary sessions on the other hand do not necessarily involve all participants.

- **Quantitative evaluation of available skills**

The break-out groups were asked to assign quantitative values to proposed training modules and training contents. The score was from 1 to 4, with the following attributes:

- 1 = not available
- 2 = rudimentary available
- 3 = substantially available
- 4 = fully available

- **Quantitative evaluation of relevant skills**

The break-out groups were asked to assign quantitative values to proposed training modules and training contents. The score was from 1 to 4, with the following attributes:

- 1 = less important
- 2 = important
- 3 = very important
- 4 = most important

Skills and Needs Assessment in Ethiopia and Sudan have used a numerical evaluation from 1 to 5 (1 = low relevance, 5 = high relevance) and an individual filling out of the questionnaires. For the sake of a unified standard the results have been scaled into the values from 1 to 4 ensuring comparable results of all 9 countries.

- **Inclusion of the consultants' expertise and experience**

The consultant brought in his specific expertise and experiences in dealing with DSS training. This was done by (i) proposing the list of training modules and training contents and by (ii) actively supporting the group discussions and enhanced the exchange of views and opinions and gave expert advice where appropriate

- **Identification of categories of stakeholders to be involved in training activities**

The training needs differ according to which function a specific individual has in dealing with the DSS. Together with the Client the following definitions have been agreed:

- **Managers**
are the responsible administrators of the DSS Centres and have direct connection to Decision-Makers. Managers are not Decision-Makers but are responsible for the whole decision-making processes.
- **Operators**
are the system administrators and responsible for the administration of the data, database, communication and user administration as well.
- **Professionals**
Professionals will be hired by NBI to build and manage the models. They can be also involved in the planning processes as well.
- **Decision Makers**
are the representatives of certain groups of beneficiaries and are directly involved in the decision-making processes.
- **Data Providers**
supply data to the DSS data bases.
- **Others**
are persons interested in getting more information on the Nile Basin and can use the IS via Internet portal.

The Training Plan is going to be formulated during the next phase of this study (Synthesis Phase) and will be provided as part of the DSS Development Plan (incl. Training Plan).

The break-out groups were briefed in detail before the respective group and plenary sessions. The table in the next page shows the questionnaire which was handed over to the participants and which, together with the institutions to be involved and the consultant's own judgment consists the basis for the Training Needs Assessment.

Table 2.2 Training Needs Assessment Form

Target Group	Relevance for DSS Score*	Skills already available Score**	Topics	Content
Management level			The project	Overview on the NB-DSS project, goals achieved, special problems on basin, regional, and country levels, and the main strategies where to apply the DSS
			NB-DSS legal framework	Description of the NB organization, legal framework, statutory work, transboundary legal framework
			Demos	Show training modules of the system operation, case studies, results, and generation of reports
			Advantages	Summarize advantages of applying DSS for planning purposes
			Case management functionality	Detailed training course for the financial and administrative component of the DSS solution – managing of the cases. User management system functionality – user rights, roles and groups
			System functionality overview	Other system functionalities – overview. System output
			Economic analysis	Basic theoretical background of economic models, cost -benefit analysis, long term return, payback calculations
Operator level			Database installation and administration	Definition of Decision Makers and rules, definition of access rights, analysis of the log file, understanding the implementation of the user administration. Data base backup, other data backup, total / incremental
			Basic GIS software installation and administration	Basic software license management. Requirements of the GIS software and administration. Managing local settings, printers, plotters etc.
			IT system solution installation and administration	Installation of the IT system, components modules and requirements. IT system solution environment – templates, fonts, localization
			Networking of the system	Network set-ups, fire walls, XML scripts for data synchronization, data base replication via network
			Database structure, datasets, topology, topology rules	Detailed learning of the database structure and datasets. Knowledge about topology and topology levels. Topology rules and errors
			Data formats and consistency	Detailed learning about national data standards. Data transfer formats, files – structure of the records, XML and GML data exchange
			Data migration procedures	Detailed learning about data migration, process of validation, error marks, data assessment and reporting

Target Group	Relevance for DSS Score*	Skills already available Score**	Topics	Content
Professional level (up to expert level)			GIS Training course	The introduction to GIS course gives knowledge for databases, basic SQL, mapping, data editing etc.
			Decision-making	Introduction in the decision-making procedure, definitions, and rules
			DSS solution components and modules, functionality	Detailed learning about the DSS functionality. The course covers all modules of the DSS solution
			DSS outputs	Reports generating, different layout preparation, peripheral devices usage – printers, plotters etc.
			Model scenario building and	The course covers all the generic modelling tools of the DSS that are needed for building a scenario and for calibrating it. The course includes multi-criteria analysis and sensitivity analysis and other group decision-making procedures
Decision Maker level			Economic analysis	Basic theoretical background of economic models, cost -benefit analysis, long term return, payback calculations
			Decision-making	Introduction in the decision-making procedure, definitions, and rules
			DSS solution components and modules, functionality	Detailed learning about the DSS functionality. The course covers all modules of the DSS solution
			DSS outputs	Reports generating, different layout preparation, peripheral devices usage – printers, plotters etc.
Data provider level			Economic analysis	Basic theoretical background of economic models, cost -benefit analysis, long term return, payback calculations
Data provider level			Data sampling and delivery	On-the-Job Training for sampling and measuring
Preferred learning method (please indicate)	lectures	e-learning		

Country: _____

Group Nr.: _____

* 1 = less important, 2 = important, 3 = very important, 4= most important

** 1 = not available 2 = rudimentary available 3 = substantially available 4 = fully available

3 Results from Stakeholder Consultations

In this chapter we give the main results of all institutions to be involved by country.

3.1 Institutions to be Involved

The specific institutions to be involved in the training activities will have to be defined by the countries together with the Client. A stakeholder identification exercise has been carried out in some countries.

3.2 Skills Assessment

This chapter gives the results of the skills assessment of the individual countries in respect of the skills already available. The quantitative analysis shows that a lack of skills can be found especially in technical and DSS specific skills. There are skills available in areas which have applications outside the DSS, like GIS and general IT skills. The skills assessment was not carried out in Sudan.

3.2.1 Burundi

Target Group	Topics	Average Skills already available Score**
Management level	Advantages	2.25
	The project	1.75
	NB-DSS legal framework	1.75
	System functionality overview	1.5
	Economic analysis	1.25
	Case management functionality	1.25
	Demos	1.25
Operator level	Basic GIS software installation and administration	1.5
	Database structure, datasets, topology, topology rules	1.25
	Database installation and administration	1.25
	Data formats and consistency	1
	Data migration procedures	1
	Networking of the system	1
	IT system solution installation and administration	1
Professional level (up to expert level)	DSS solution components and modules, functionality	1.75
	Model and scenario building	1.5
	Economic analysis	1.5
	Decision-making	1.5
Decision Maker level	DSS outputs	1.25
	Economic analysis	1.5
	DSS solution components and modules, functionality	1.5
	Basic GIS training course	1.25
	DSS outputs	1.25
Data provider level	Decision-making	1.25
	Data sampling and delivery	1.25

The analysis on available skills in Burundi results in considerable potential for deepening of knowledge and further training of skills.

3.2.2 DR Congo

Target Group	Topics	Average Skills already available Score**
Management level	Economic analysis	2.5
	The project	1.5
	Advantages	1.5
	NB-DSS legal framework	1.5
	Demos	1
	System functionality overview	1
	Case management functionality	1
Operator level	Database installation and administration	2
	Data migration procedures	2
	Basic GIS software installation and administration	2
	Networking of the system	2
	IT system solution installation and administration	2
	Database structure, datasets, topology, topology rules	2
	Data formats and consistency	1.5
Professional level (up to expert level)	Basic GIS training course	1.5
	Decision-making	1.5
	DSS solution components and modules, functionality	1.5
	DSS outputs	1.5
	Model and scenario building	1.5
	Economic analysis	1.5
Decision Maker level	Economic analysis	2
	Decision-making	2
	DSS outputs	1.5
	DSS solution components and modules, functionality	1.5
Data provider level	Data sampling and delivery	1.5

Also in DRC the professional capacities have considerable potentials for improvement through training activities, whereas the operation capacities are developed better.

3.2.3 Egypt

Target Group	Topics	Skills already available Score**
Management level	Advantages	3
	System functionality overview	2.25
	Demos	2
	The project	2
	NB-DSS legal framework	2
	Economic analysis	1.5
	Case management functionality	1.5
Operator level	Basic GIS software installation and administration	3
	Database installation and administration	2.5
	IT system solution installation and administration	2.5
	Data formats and consistency	2
	Networking of the system	2
	Database structure, datasets, topology, topology rules	2
	Data migration procedures	1.5
Professional level (up to expert level)	Basic GIS training course	3
	Decision-making	3
	DSS outputs	3
	DSS solution components and modules, functionality	2.5
	Model and scenario building	1.5
Decision Maker level	Economic analysis	1.5
	DSS solution components and modules, functionality	2.5
	Decision-making	2
	DSS outputs	1.5
Data provider level	Economic analysis	1
	Data sampling and delivery	2.5

In Egypt, most skills are relatively well developed in comparison to the other riparian countries, since knowledge centres in Egypt have already gained experience with the development and management of DSS applications.

3.2.4 Ethiopia

Target Group	Topics	Skills already available Score**
Management level	NB-DSS legal framework	2.67
	System functionality overview	2.67
	Case management functionality	2.67
	Advantages	2.67
	The project	2.67
	Economic analysis	1.33
	Demos	1.33
Operator level	Data formats and consistency	2.67
	Networking of the system	1.33
	Database structure, datasets, topology, topology rules	1.33
	Data migration procedures	1.33
	Basic GIS software installation and administration	1.33
	Database installation and administration	1.33
	IT system solution installation and administration	1.33
Professional level (up to expert level)	Basic GIS training course	2.67
	Decision-making	2.67
	DSS solution components and modules, functionality	2.67
	DSS outputs	1.33
	Model and scenario building	1.33
	Economic analysis	1.33
Decision Maker level	Decision-making	2.67
	Economic analysis	1.33
	DSS outputs	1.33
	DSS solution components and modules, functionality	1.33
Data provider level	Data sampling and delivery	2.67

The level of available professional and operational skills is similar to these of the neighbouring countries. Management capacities have relatively better developed than professional and operational capacities.

3.2.5 Kenya

Target Group	Topics	Average Skills already available Score**
Management level	Economic analysis	2.67
	The project	2
	System functionality overview	2
	NB-DSS legal framework	1.67
	Demos	1.67
	Case management functionality	1.33
	Advantages	1.33
Operator level	Networking of the system	2.67
	IT system solution installation and administration	2.67
	Basic GIS software installation and administration	2.67
	Database structure, datasets, topology, topology rules	2.33
	Database installation and administration	2.33
	Data formats and consistency	1.67
	Data migration procedures	1.67
Professional level (up to expert level)	Basic GIS training course	2.67
	Economic analysis	2.33
	Decision-making	2.33
	DSS solution components and modules, functionality	1.67
	Model and scenario building	1.67
	DSS outputs	1.67
Decision Maker level	DSS outputs	2
	Economic analysis	1.67
	DSS solution components and modules, functionality	1.67
	Decision-making	1.33
Data provider level	Data sampling and delivery	2

In Kenya the management and decision making levels have a higher need for training and capacity development compared to the professional and operator levels, which is relatively well developed compared to other riparian countries.

3.2.6 Rwanda

Target Group	Topics	Average Skills already available Score**
Management level	NB-DSS legal framework	2
	Advantages	1.5
	System functionality overview	1
	Economic analysis	1
	Case management functionality	1
	Demos	1
	The project	1
Operators level	Networking of the system	3
	IT system solution installation and administration	2.5
	Data formats and consistency	2
	Database structure, datasets, topology, topology rules	2
	Basic GIS software installation and administration	2
	Data migration procedures	1.5
	Database installation and administration	1
Professional level (up to expert level)	Basic GIS training course	1.5
	Decision-making	1.5
	DSS solution components and modules, functionality	1
	DSS outputs	1
	Model and scenario building	1
	Economic analysis	1
Decision Maker level	Decision-making	1
	DSS solution components and modules, functionality	1
	DSS outputs	1
	Economic analysis	1
Data provider level	Data sampling and delivery	1

In Rwanda, the need for and the interest in training activities on professional, managerial and operational capacities for the development and operation of DSS are relatively high.

3.2.7 Tanzania

Target Group	Topics	Average Skills already available Score**
Management level	Advantages	2.25
	Economic analysis	2.25
	The project	2.25
	Demos	2
	System functionality overview	2
	Case management functionality	2
	NB-DSS legal framework	2
Operators level	Networking of the system	2.5
	IT system solution installation and administration	2.5
	Basic GIS software installation and administration	2.25
	Database structure, datasets, topology, topology rules	2
	Database installation and administration	2
	Data formats and consistency	1.75
	Data migration procedures	1.5
Professional level (up to expert level)	Economic analysis	2.75
	Basic GIS training course	2.25
	Decision-making	2.25
	DSS outputs	2
	Model and scenario building	1.75
	DSS solution components and modules, functionality	1.5
Decision Maker level	Economic analysis	2.25
	DSS outputs	1.75
	Decision-making	1.5
	DSS solution components and modules, functionality	1.5
Data provider level	Data sampling and delivery	2.5

In Tanzania the available skills are relatively high developed compared to many of the other riparian countries. The current capacities are quite evenly distributed among the professional, managerial, decision makers and operational levels.

3.2.8 Uganda

Target Group	Topics	Average Skills already available Score**
Management level	Economic analysis	2.33
	The project	2.00
	NB-DSS legal framework	2.00
	Advantages	1.67
	System functionality overview	1.33
	Case management functionality	1.33
	Demos	1.00
Operator level	Basic GIS software installation and administration	3.33
	Networking of the system	3.00
	Data formats and consistency	2.67
	Data migration procedures	2.67
	Database structure, datasets, topology, topology rules	2.67
	IT system solution installation and administration	2.67
	Database installation and administration	2.33
Professional level (up to expert level)	Basic GIS training course	3.33
	Economic analysis	3.00
	Decision-making	2.67
	DSS solution components and modules, functionality	1.33
	DSS outputs	1.33
Decision Makers level	Model and scenario building	1.00
	Economic analysis	3.00
	Decision-making	2.67
	DSS outputs	1.00
Data provider level	DSS solution components and modules, functionality	1.00
	Data sampling and delivery	2.00

The available capacities in Uganda are quite well developed for the operational level, and more modest for the other levels.

3.3 Needs Assessment

Most of the topics proposed by the consultant were judged as highly relevant for the DSS.

3.3.1 Burundi

Target Group	Topics	Average Relevance for DSS Score*
Management level	Case management functionality	3.75
	System functionality overview	3.75
	Advantages	3.5
	Economic analysis	3.5
	The project	3.5
	NB-DSS legal framework	3.25
	Demos	3.25
Operator level	Basic GIS software installation and administration	3.75
	Database structure, datasets, topology, topology rules	3.75
	Data formats and consistency	3.75
	Data migration procedures	3.75
	Networking of the system	3.75
	IT system solution installation and administration	3.75
	Database installation and administration	3.5
Professional level (up to expert level)	Decision-making	4
	Basic GIS training course	3.75
	Model and scenario building	3.75
	Economic analysis	3.75
	DSS solution components and modules, functionality	3.75
Decision maker level	DSS outputs	3.5
	Economic analysis	3.25
	DSS solution components and modules, functionality	3.25
	Decision-making	3
Data provider level	Data sampling and delivery	3.75

All proposed topics and possible training modules are considered as highly relevant. The scores are close to the maximum for all the modules and no module was considered irrelevant. This is in line with the results obtained from the assessment of the skills also available.

3.3.2 DR Congo

Target Group	Topics	Average Relevance for DSS Score*
Management level	Demos	4
	Advantages	4
	The project	4
	System functionality overview	4
	Economic analysis	3.5
	Case management functionality	3.5
	NB-DSS legal framework	3.5
Operator level	Database installation and administration	3.5
	Basic GIS software installation and administration	3.5
	IT system solution installation and administration	3.5
	Networking of the system	3.5
	Database structure, datasets, topology, topology rules	3.5
	Data formats and consistency	3.5
	Data migration procedures	3.5
Professional level (up to expert level)	Economic analysis	4
	Model and scenario building	4
	Basic GIS training course	4
	Decision-making	4
	DSS outputs	3.5
	DSS solution components and modules, functionality	3.5
Decision maker level	Economic analysis	4
	DSS solution components and modules, functionality	4
	Decision-making	4
	DSS outputs	3.5
Data provider level	Data sampling and delivery	4

In the DRC all proposed modules are considered almost equally relevant to develop the needed capacities for the functioning of the DSS.

3.3.3 Egypt

Target Group	Topics	Average Relevance for DSS Score*
Management level	The project	4
	NB-DSS legal framework	4
	Case management functionality	4
	Economic analysis	4
	Demos	3.5
	Advantages	3.5
	System functionality overview	3.5
Operator level	Networking of the system	4
	Database structure, datasets, topology, topology rules	4
	Data migration procedures	4
	Database installation and administration	3.5
	IT system solution installation and administration	3.5
	Data formats and consistency	3.5
	Basic GIS software installation and administration	3
Professional level (up to expert level)	Model and scenario building	4
	Economic analysis	4
	Basic GIS training course	3.5
	Decision-making	3.5
	DSS solution components and modules, functionality	3.5
	DSS outputs	3.5
Decision maker level	Decision-making	3
	DSS solution components and modules, functionality	3
	DSS outputs	3
	Economic analysis	3
Data providers level	Data sampling and delivery	2.5

Also in Egypt all proposed training modules are considered highly relevant, with the exception at the data provider level which shows a significantly lower score concerning its relevance for the DSS.

3.3.4 Ethiopia

Target Group	Topics	Average Relevance for DSS Score*
Management level	Advantages	3.76
	The project	3.68
	Demos	3.2
	NB-DSS legal framework	3.12
	System functionality overview	3.12
	Case management functionality	3.04
	Economic analysis	2.96
Operator level	Database structure, datasets, topology, topology rules	3.68
	Database installation and administration	3.6
	Basic GIS software installation and administration	3.6
	Data formats and consistency	3.6
	IT system solution installation and administration	3.44
	Data migration procedures	3.2
	Networking of the system	3.2
Professional level (up to expert level)	Model and scenario building	3.76
	DSS solution components and modules, functionality	3.68
	Basic GIS training course	3.68
	DSS outputs	3.68
	Economic analysis	3.68
	Decision-making	3.6
Decision maker level	Decision-making	3.28
	DSS solution components and modules, functionality	3.28
	DSS outputs	3.28
	Economic analysis	2.72
Data provider level	Data sampling and delivery	2.82

In Ethiopia, all proposed topics are considered to be almost equally important, with exception of the economic analysis. The highest emphasis was laid on the professional level.

3.3.5 Kenya

Target Group	Topics	Average Relevance for DSS Score*
Management level	The project	4
	Case management functionality	3.67
	Advantages	3.67
	Demos	3.67
	System functionality overview	3.33
	NB-DSS legal framework	3.33
	Economic analysis	3
Operator level	Basic GIS software installation and administration	4
	Database installation and administration	4
	Data formats and consistency	3.67
	Data migration procedures	3.67
	IT system solution installation and administration	3.33
	Networking of the system	3.33
	Database structure, datasets, topology, topology rules	3.33
Professional level (up to expert level)	Model and scenario building	4
	DSS solution components and modules, functionality	4
	DSS outputs	3.67
	Decision-making	3.33
	Basic GIS training course	3.33
Decision maker level	Economic analysis	2.67
	DSS outputs	3.67
	Decision-making	3.33
	Economic analysis	3.33
Data provider level	DSS solution components and modules, functionality	3
	Data sampling and delivery	3.67

In Kenya all proposed modules are considered highly relevant for the DSS. In contrast to the other riparian countries, the module proposed for the Data Providers level is considered very relevant in Kenya.

3.3.6 Rwanda

Target Group	Topics	Average Relevance for DSS Score*
Management level	NB-DSS legal framework	4
	The project	4
	Advantages	3.5
	System functionality overview	3
	Economic analysis	3
	Case management functionality	3
	Demos	3
Operators level	Data migration procedures	4
	Database installation and administration	4
	IT system solution installation and administration	3.5
	Data formats and consistency	3.5
	Basic GIS software installation and administration	3.5
	Database structure, datasets, topology, topology rules	3.5
	Networking of the system	3
Professional level (up to expert level)	Basic GIS training course	4
	Decision-making	4
	DSS solution components and modules, functionality	4
	DSS outputs	4
	Model and scenario building	4
Decision maker level	Economic analysis	4
	Decision-making	4
	DSS solution components and modules, functionality	4
	DSS outputs	4
Data provider level	Economic analysis	4
	Data sampling and delivery	4

In Rwanda all topics are seen as highly relevant and important, which is coherent with the results from the assessment of the skills already available.

3.3.7 Sudan

Target Group	Topics	Average Relevance for DSS Score*
Management level	The project	3.76
	NB-DSS legal framework	3.6
	Case management functionality	3.44
	System functionality overview	2.88
	Economic analysis	2.72
	Demos	2.56
	Advantages	2.4
Operator level	Database installation and administration	4
	Basic GIS software installation and administration	3.84
	Data migration procedures	3.52
	IT system solution installation and administration	3.44
	Networking of the system	3.44
	Database structure, datasets, topology, topology rules	3.2
	Data formats and consistency	1.12
Professional level (up to expert level)	Decision-making	4
	Model and scenario building	3.52
	Basic GIS training course	3.44
	DSS outputs	3.36
	DSS solution components and modules, functionality	3.04
Decision maker level	Economic analysis	2.64
	Economic analysis	2.96
	DSS solution components and modules, functionality	2.96
	DSS outputs	2.88
Data providers level	Decision-making	2.88
	Data sampling and delivery	3.52

In Sudan a wider range of scores for training needs is observed, with some proposed modules receiving high and others low values. The training needs are therefore quite differentiated and can be considered as comprehensive.

3.3.8 Tanzania

Target Group	Topics	Average Relevance for DSS Score*
Management level	Economic analysis	3.75
	Demos	3.75
	The project	3.75
	NB-DSS legal framework	3.75
	Advantages	3.25
	System functionality overview	3.25
	Case management functionality	3
Operator level	Database installation and administration	4
	Basic GIS software installation and administration	4
	IT system solution installation and administration	4
	Networking of the system	4
	Database structure, datasets, topology, topology rules	4
	Data formats and consistency	4
	Data migration procedures	4
Professional level (up to expert level)	DSS solution components and modules, functionality	4
	DSS outputs	4
	Basic GIS training course	4
	Model and scenario building	4
	Decision-making	3.5
	Economic analysis	2.75
Decision maker level	Economic analysis	3.75
	DSS outputs	3.5
	Decision-making	3.5
	DSS solution components and modules, functionality	2.75
Data provider level	Data sampling and delivery	2.75

In Tanzania most of the proposed topics are considered highly relevant, resulting in extensive training needs, broadly in line with the other countries.

3.3.9 Uganda

Target Group	Topics	Average Relevance for DSS Score*
Management level	NB-DSS legal framework	4.00
	The project	4.00
	System functionality overview	3.67
	Demos	3.33
	Advantages	3.33
	Economic analysis	3.00
	Case management functionality	3.00
Operator level	Networking of the system	4.00
	Data formats and consistency	4.00
	Database installation and administration	4.00
	Basic GIS software installation and administration	4.00
	Data migration procedures	3.67
	Database structure, datasets, topology, topology rules	3.67
	IT system solution installation and administration	3.67
Professional level (up to expert level)	Basic GIS training course	4.00
	Decision-making	4.00
	DSS solution components and modules, functionality	4.00
	DSS outputs	4.00
	Model and scenario building	4.00
Decision maker level	Economic analysis	3.67
	DSS outputs	4.00
	DSS solution components and modules, functionality	3.67
	Decision-making	3.33
Data provider level	Economic analysis	3.00
	Data sampling and delivery	4.00

Also in Uganda most of the proposed topics are considered highly relevant and therefore result in high training needs, broadly in line with those of the other riparian countries.

3.4 Training and Awareness Workshops

The DSS awareness and training workshops were designed for two days duration, offered in two Sub-regional Workshops, and 9 national workshops.

The first day of the workshop offered a series of lectures (see below) and structured discussion sessions. The workshops were intended to provide the language and concepts to facilitate the detailed needs assessment; they were also designed to raise awareness of what can be done by using as many examples contributed by the participants that will directly apply to the Nile riparian countries as possible, encouraging active participation with real-world examples of decision problems introduced by the participants.

The sessions covered basic decision making concepts and terminology, basic approaches from simple information systems to stochastic optimization with multiple criteria and multiple objectives, multi-attribute decision theory, economic valuation methods, group decision making, game theory, uncertainty and risk management.

Workshop Components

The workshops consisted of a series of introductory lectures (selected from a set of 12 presentations) on day 1, followed by a set of practical model/DSS demo examples on the second day.

Table 4.1 Training Workshop Components

Topic	Content
Introduction and overview	Definitions, terminology
IWRM problems and data	Criteria, indicators
Economic valuation	Rational choice
Simulation modelling	Optimization modelling
Uncertainty, gaming	DSS methods and tools
DSS implementation	DSS success and failure

The demo cases discussed were made available on-line to all registered workshop participants with e-mail based tutor support kurt@ess.co.at for the participants to keep working with.

The objective was to introduce the potential of DSS tools, illustrate the scope and benefits of possible applications, but also their limitations, data requirements, and infrastructure and institutional requirements, and, in general get the participants interested in active participation, including the exploratory application of the on-line tools for any specific problem or project. All hands-on exercises and demos used web-based interactive models and DSS tools that can be used from any PC with a standard web browser and Internet connection. These tools and all teaching materials were made available to all registered workshop participants also before and after the workshops, for the duration of the consultancy assignment, for all registered participants from the workshops with e-mail-based tutor support.

Selected on-line Resources

Data requirements for case study demonstration examples
 DSS for IWRM Introductory PowerPoint presentation, on-line,
 OPTIMA IWRM project and on-line DSS tools

4 Summary of Results

The central conclusions of the Training Needs Assessment and the Training Workshops are the following:

The intensity of the needed training will differ from country to country; therefore a modularised structure of the Training Plan is recommended. It is necessary to train a 'critical mass' of trainees for ensuring that the DSS technology, awareness and use is internalized at institution level and is sustainable after the end of the project.

The Training Needs Assessment has furthermore strongly contributed to the raising of awareness among the stakeholders in terms understanding of the different user levels and target groups and hence the necessity for differentiated training needs according to the target groups and the functions of the different individuals working with, supporting and deriving information from the DSS. The value and advantages of the DSS for focused and result oriented discussions and decision-making in the various national and transboundary political areas has also been introduced to the stakeholders. In future, focused discussions will be enhanced within the NBI and its national components.

It has emerged that also other institutions, at national and international level offer training courses in the basin with DSS relevant content. Considerable synergies can so be generated in the future, which means that the efficiency of training and capacity building is notably enhanced.

Already existing and planned training activities of the NBI itself should be focused and bundled, increasing the overall efficiency of the trainings and capacity building activities.

The direct relevance of the Training Needs Assessment for the elaboration of the Training Plan is evidenced. The discussions during the Analysis Phase resulted in the understanding that two areas of training will be covered by professional service providers:

- the specific software training will be delivered by the software supplier (to be included in the tendered package)
- the training related to the development of applications, calibration and fine tuning of the models to be used will be supplied also by the respective service provider (also to be included in the tendered package)

Awareness raising trainings for decision makers and the high administrative levels are very important, since the knowledge about the potential of the DSS for the future transboundary and national policy dialogues, hence, decision-making should be enhanced.

The detailed Training Needs Assessment resulted in the following training needs:

4.1 Management Level

The Project

These training modules will give an overview on the NB-DSS project, its goals achieved, the special problems on basin, regional, and country levels, and the main strategies for the application of the DSS.

NB-DSS Legal Framework

The content of the training unit is mainly the NBI organization, its legal framework, and specifically the transboundary issues.

Demos

Here there will be shown features of the system operation; case studies of applications of the DSS, its results, and the generation of reports.

Advantages

This training unit will summarize the advantages of the DSS for planning purposes and the transparency of decision making and transboundary communication mechanisms.

Case Management Functionality

This training unit is a detailed training course for the financial and administrative component of the DSS. It also will deal with the features of user management, system functionality, user rights, roles and groups.

System Functionality Overview

This unit presents the other system functionalities.

Economic Analysis

The training unit in economic analysis gives a basic theoretical background of economic models, cost-benefit analysis, long term return and other economic calculations.

4.2 Operators Level

Database Installation and Administration

This training unit puts in the centre the definition of Decision Makers and rules, the definition of access rights to the various features of the DSS, the analysis of the log file, the understanding of the implementation of user administration. Data base backup, other data backup (total and incremental) are further contents of this module.

Basic GIS Software Installation and Administration

This training unit comprises basic software license management, software operation, its administration and managing of the local settings (i.e. printers, plotters and other devices). The unit comprises also the subject of remote sensing.

IT System Solution Installation and Administration

The unit presents the necessary skills regarding the installation of the IT system, its components and modules. Furthermore it deals with the IT system solution environment such as templates, fonts, localization.

Networking of the System

This training unit has in its centre the features of Network set-ups, fire walls, XML scripts for data synchronization and data base replication via network.

Database Structure, Datasets, Topology, Topology Rules

Here there will be carried out detailed learning of the database structures and datasets, As well as knowledge about topology and topology levels, topology rules and errors

Data Formats and Consistency

In this training unit there will be detailed learning about national data standards offered. Data transfer formats, files, and structure of the records as well as XML and GML data exchange.

Data Migration Procedures

The contents of this training unit will be data migration, the process of validation, error marks, data assessment and reporting.

Model and scenario building

The unit covers all the generic modelling tools of the DSS that are needed for building a scenario and for calibrating it. The course includes multi-criteria analysis and sensitivity analysis and other group decision-making procedures.

4.3 Professional Level (Up to Expert Level)

GIS Training Course

The introduction to GIS course gives knowledge for databases, basic SQL, mapping, data editing and other GIS specific features. The unit comprises also the subject of remote sensing.

Decision-Making

The unit covers an introduction in the decision-making procedure, definitions, and rules.

DSS Solution Components and Modules, Functionality

This unit covers detailed learning about the DSS functionality and the features and aspects of the DSS solution.

DSS Outputs

Central contents of this unit are report generating, different layout preparation, peripheral devices usage such as printers, plotters and other devices.

Model and Scenario Building

The unit covers all the generic modelling tools of the DSS that are needed for building a scenario and for calibrating it. The course includes multi-criteria analysis and sensitivity analysis and other group decision-making procedures.

Economic Analysis

The training unit in Economic analysis gives a basic theoretical background of economic models, cost-benefit analysis, long term return and other economic calculations.

4.4 Decision Makers Level

Decision-Making

The unit covers an introduction in the decision-making procedure, definitions, and rules.

DSS Solution Components and Modules, Functionality

This unit covers detailed learning about the DSS functionality and the features and aspects of the DSS solution.

DSS Outputs

Central contents of this unit are report generating, different layout preparation, peripheral devices usage such as printers, plotters and other devices.

Economic Analysis

The training unit in Economic analysis gives a basic theoretical background of economic models, cost-benefit analysis, long term return and other economic calculations.

Model and Scenario Building

The unit covers all the generic modelling tools of the DSS that are needed for building a scenario and for calibrating it. The course includes multi-criteria analysis and sensitivity analysis and other group decision-making procedures.

4.5 Data Providers Level

Data Sampling and Delivery

This unit will basically consist of on-the-Job Training for sampling and measuring.

Data Formats and Consistency

In this training unit there will be detailed learning about national data standards offered. Data transfer formats, files, and structure of the records as well as XML and GML data exchange.

5 Outline of Training Plan

5.1 General Considerations

First of all the training activities shall not be regarded as stand alone interventions. They have to be seen in the wider context of the objectives of the NBI-DSS, such as the enhancement of regional co-operation.

Training activities will be started according to regional perspectives first and latter come down to sub-regional issues and finally focus national level issues and will focus on discussion/solution of relevant problems on the ground and encourage use of 'own'/national data. In the Training Plan, attention shall also be drawn on the specification of qualifications for the participants. In this sense there should be as much interaction as possible between the developers of the definitive curricula and the actual trainers. This will be relevant in future stages of the DSS, when the definitive set up and software solution will be defined.

The training plan should also consider distant and e-learning schemes. Follow-up training such as refresher courses should also be part of the training concept in view to guarantee sustainable training activities.

The training advice and assistance provided shall be both demand-driven and proactive, yet special attention will be given to intercultural communication. Any training program must respond to the needs formulated and expressed by its stakeholders, so that these needs are optimally and efficiently met and the intended results obtained. The Client should take a proactive role in assisting the beneficiaries to identify and understand their needs and to formulate their needs for capacity building and assistance.

In the whole co-ordination process for the different countries, the concerned staff and the different stakeholders, special emphasis should be placed on ensuring a harmonious team spirit and mutual support consistent with the objectives of the NBI and its DSS. Changes in the framework conditions should be included through the steering and monitoring process.

It has also to be ensured that the trainings are conducted using the most efficient means; that ready access is available to expertise on all relevant matters. Most importantly, however, the approach must be flexible enough to respond to any need for further assistance that might arise during implementation.

The general approach must therefore also be demand-oriented and pragmatic with regard to the country specific needs. Finally, the general approach is results-oriented. Capacity building needs to generate visible results.

In determining the mechanism for the functioning of the training, and especially for the tendering and procurement of the training services in the next phases of the development and implementation of the DSS, the following institutional aspects have to be addressed and agreed upon with the Client:

- Who sets and approves the standards for the training?
- Who provides training?
- What is the indicative available budget?

5.2 Modularized Training Plan

The training plan will be composed of five modules; each module corresponds to certain area of functions within the DSS. Central point hereby is always the practical challenge in the work with the DSS. Central objective is the increase of the capabilities and the skills of the personnel.

The training program in form of a modularized system is intended to be offered to the countries. It allows the countries to choose and to customize the modules and to propose for their DSS staff a complete itinerary or just to absolve single elements, which are indispensable in their respective area of work. Each module transmits a package of competencies and is at the same time a separate unit of education. The modules themselves are composed by specific Training Units. The training can be tendered for class room teaching as well as for e-learning environments.

The modules contain competencies as outlined in the previous chapter. Their will be different training modules corresponding to the four target groups, which were identified during the 2nd Sub-regional Workshop in Entebbe:

- Decision Makers
- Technical Experts
- Modellers
- Other Users

5.3 Pre-conditions for the Development of the Training Plan

- **Prioritization of the modules**
There should be an agreement with the Client regarding the modules for the different stakeholder groups and the training units which are parts of the modules.
- **Budget**
In order to avoid unnecessary work and misunderstandings the Client should give an indication in respect to the available budget.
- **Provider of training**
We suppose that the training will be tendered; most probably in different packages and/or as part of the other DSS implementation activities.

After having reached agreement with the Client and according to the ToR we will develop a training plan which will contain the following features:

- an overall conceptualization of the training modules
- description of training modules showing their objectives and scope, relevance to the project objective, indicative durations, etc.
- role of the NBI WRPM
- possible implementation schedule
- budget indication according to the information received from the Client

Appendix C1

Detailed Country Specific Results

Burundi

Target group	Topics	Relevance for DSS Group 1	Skills already available Group 1	Relevance for DSS Group 2	Skills already available Group 2	Relevance for DSS Group 3	Skills already available Group 3	Relevance for DSS Group 4	Skills already available Group 4	Average Relevance for DSS Score*	Average Skills already available Score**
Management level	The project	4	1	3	2	3	2	4	2	3,5	1,75
	NE-DSS legal framework	4	1	3	2	3	3	3	1	3,25	1,75
	Demos	4	1	3	1	3	1	3	2	3,25	1,25
	Advantages	4	1	3	2	3	3	4	3	3,5	2,25
	Case management functionality	4	1	4	1	3	1	4	2	3,75	1,25
	System functionality overview	4	1	4	2	3	1	4	2	3,75	1,5
	Economic analysis	4	1	3	2	3	1	4	1	3,5	1,25
Operator level	Database installation and administration	4	1	3	2	3	1	4	1	3,5	1,25
	Basic GIS software installation and administration	4	1	4	2	3	2	4	1	3,75	1,5
	IT system solution installation and administration	4	1	4	1	3	1	4	1	3,75	1
	Networking of the system	4	1	4	1	3	1	4	1	3,75	1
	Database structure, datasets, topology, topology rules	4	1	4	1	3	2	4	1	3,75	1,25
	Data formats and consistency	4	1	4	1	3	1	4	1	3,75	1
	Data migration procedures	4	1	4	1	3	1	4	1	3,75	1
Professional level (up to expert level)	Basic GIS training course	4	1	4	1	3	2	4	2	3,75	1,5
	Decision-making	4	1	4	2	4	2	4	1	4	1,5
	DSS solution components and modules, functionality	4	1	4	2	3	2	4	2	3,75	1,75
	DSS outputs	4	1	3	1	3	1	4	2	3,5	1,25
	Model and scenario building	4	2	4	2	3	1	4	1	3,75	1,5
	Economic analysis	4	1	4	3	3	1	4	1	3,75	1,5
Decision Maker level	Basic GIS training course	4	1	4	2	3	1	4	1	3,75	1,25
	Decision-making	3	1	3	2	3	1	3	1	3	1,25
	DSS solution components and modules, functionality	4	1	3	3	3	1	3	1	3,25	1,5
	DSS outputs	4	1	3	2	3	1	3	1	3,25	1,25
	Economic analysis	4	1	4	3	3	1	2	1	3,25	1,5
Data Provider level	Data sampling and delivery	4	1	4	2	3	1	4	1	3,75	1,25
Preferred learning method (please indicate)		lectures		lectures		lectures		lectures		lectures	

DR Congo

Target group	Topics	Relevance for DSS Group 1	Skills already available Group 1	Relevance for DSS Group 2	Skills already available Group 2	Average Relevance for DSS Score*	Average Skills already available Score**
Management level	The project	4	1	4	2	4	1,5
	NB-DSS legal framework	4	1	3	2	3,5	1,5
	Demos	4	1	4	1	4	1
	Advantages	4	2	4	1	4	1,5
	Case management functionality	4	1	3	1	3,5	1
	System functionality overview	4	1	4	1	4	1
	Economic analysis	4	3	3	2	3,5	2,5
Operator level	Database installation and administration	4	1	3	3	3,5	2
	Basic GIS software installation and administration	4	1	3	3	3,5	2
	IT system solution installation and administration	4	1	3	3	3,5	2
	Networking of the system	4	1	3	3	3,5	2
	Database structure, datasets, topology, topology rules	4	1	3	3	3,5	2
	Data formats and consistency	4	1	3	2	3,5	1,5
	Data migration procedures	4	2	3	2	3,5	2
Professional level (up to expert level)	Basic GIS training course	4	1	4	2	4	1,5
	Decision-making	4	2	4	1	4	1,5
	DSS solution components and modules, functionality	4	1	3	2	3,5	1,5
	DSS outputs	4	1	3	2	3,5	1,5
	Model and scenario building	4	2	4	1	4	1,5
	Economic analysis	4	2	4	1	4	1,5
Decision Maker level	Basic GIS training course	4	2	4	2	4	2
	Decision-making	4	2	4	2	4	2
	DSS solution components and modules, functionality	4	1	4	2	4	1,5
	DSS outputs	4	1	3	2	3,5	1,5
	Economic analysis	4	3	4	1	4	2
Data Provider level	Data sampling and delivery	4	1	4	2	4	1,5
Preferred learning method (please indicate)		lectures		lectures			

Egypt

Target group	Topics	Relevance for DSS Score*	Skills already available Score**
Management level	The project	4,00	2,00
	NB-DSS legal framework	4,00	2,00
	Demos	3,50	2,00
	Advantages	3,50	3,00
	Case management functionality	4,00	1,50
	System functionality overview	3,50	2,00
	Economic analysis	4,00	2,25
Operator Level	Database installation and administration	3,50	1,75
	Basic GIS software installation and administration	3,00	2,50
	IT system solution installation and administration	3,50	2,50
	Networking of the system	4,00	2,00
	Database structure, datasets, topology, topology rules	3,50	2,00
	Data formats and consistency	3,50	2,00
	Data migration procedures	4,00	1,50
Professional level (up to expert level)	Basic GIS training course	3,50	3,00
	Decision-making	3,50	3,00
	DSS solution components and modules, functionality	3,50	2,50
	DSS outputs	3,50	3,00
	Model and scenario building	4,00	1,50
	Economic analysis	4,00	1,50
Decision Maker level	Basic GIS training course	3,00	3,00
	Decision-making	3,00	2,00
	DSS solution components and modules, functionality	3,00	2,50
	DSS outputs	3,00	1,50
	Economic analysis	3,00	1,00
Data Provider level	Data sampling and delivery	2,00	2,50
Preferred learning method (please indicate)		Lectures 4	e-learning 2

Ethiopia

Target group	Topics	Score	Average Relevance for DSS Score*	Score	Average Skills already available Score**
Management level	The project	2,67	2,67	2,91	2,91
	NB-DSS legal framework	1,33	1,33	2,82	2,82
	Demos	2,67	2,67	2,82	2,82
	Advantages	2,67	2,67	3,09	3,09
	Case management functionality	2,67	2,67	2,36	2,36
	System functionality overview	1,33	1,33	2,36	2,36
	Economic analysis	2,67	2,67	1,55	1,55
Operator level	Database installation and administration	1,33	1,33	3,45	3,45
	Basic GIS software installation and administration	1,33	1,33	3,45	3,45
	IT system solution installation and administration	1,33	1,33	3,18	3,18
	Networking of the system	1,33	1,33	2,73	2,73
	Database structure, datasets, topology, topology rules	2,67	2,67	3,64	3,64
	Data formats and consistency	1,33	1,33	3,18	3,18
	Data migration procedures	1,33	1,33	3,09	3,09
Professional level (up to expert level)	Basic GIS training course	2,67	2,67	3,36	3,36
	Decision-making	2,67	2,67	2,91	2,91
	DSS solution components and modules, functionality	2,67	2,67	3,64	3,64
	DSS outputs	1,33	1,33	3,27	3,27
	Model and scenario building	1,33	1,33	3,73	3,73
	Economic analysis	1,33	1,33	3,18	3,18
Decision Maker level					
	Decision-making	1,33	1,33	3,55	3,55
	DSS solution components and modules, functionality	2,67	2,67	2,64	2,64
	DSS outputs	1,33	1,33	2,45	2,45
	Economic analysis	1,33	1,33	2,55	2,55
Data Provider level	Data sampling and delivery	2,67	2,67	3,09	3,09
Preferred learning method (please indicate)					

Kenya

Target group	Topics	Relevance for DSS Group 1	Skills already available Group 1	Relevance for DSS Group 2	Skills already available Group 2	Relevance for DSS Group 3	Skills already available Group 3	Average Relevance for DSS Score*	Average Skills already available Score**
Management level	The project	4,00	2,00	4,00	2,00	4,00	2,00	4,00	2,00
	NB-DSS legal framework	4,00	3,00	3,00	1,00	3,00	1,00	3,33	1,67
	Demos	3,00	2,00	4,00	1,00	4,00	2,00	3,67	1,67
	Advantages	3,00	1,00	4,00	2,00	4,00	1,00	3,67	1,33
	Case management functionality	4,00	1,00	3,00	2,00	4,00	1,00	3,67	1,33
	System functionality overview	4,00	2,00	3,00	3,00	3,00	1,00	3,33	2,00
Operator level	Economic analysis	2,00	3,00	3,00	2,00	4,00	3,00	3,00	2,67
	Database installation and administration	4,00	2,00	4,00	2,00	4,00	3,00	4,00	2,33
	Basic GIS software installation and administration	4,00	3,00	4,00	3,00	4,00	2,00	4,00	2,67
	IT system solution installation and administration	2,00	3,00	4,00	3,00	4,00	2,00	3,33	2,67
	Networking of the system	2,00	3,00	4,00	3,00	4,00	2,00	3,33	2,67
	Database structure, datasets, topology, topology rules	4,00	3,00	2,00	3,00	4,00	1,00	3,33	2,33
	Data formats and consistency	4,00	2,00	3,00	2,00	4,00	1,00	3,67	1,67
Professional level (up to expert level)	Data migration procedures	4,00	1,00	3,00	3,00	4,00	1,00	3,67	1,67
	Basic GIS training course	3,00	3,00	3,00	3,00	4,00	2,00	3,33	2,67
	Decision-making	4,00	2,00	2,00	4,00	4,00	1,00	3,33	2,33
	DSS solution components and modules, functionality	4,00	2,00	4,00	2,00	4,00	1,00	4,00	1,67
	DSS outputs	3,00	2,00	4,00	2,00	4,00	1,00	3,67	1,67
	Model and scenario building	4,00	2,00	4,00	2,00	4,00	1,00	4,00	1,67
Decision Maker level	Economic analysis	2,00	3,00	2,00	2,00	4,00	2,00	2,67	2,33
	Basic GIS training course	3,00	2,00	2,00	2,00	4,00	1,00	3,00	1,67
	Decision-making	2,00	2,00	4,00	1,00	4,00	1,00	3,33	1,33
	DSS solution components and modules, functionality	2,00	2,00	3,00	2,00	4,00	1,00	3,00	1,67
	DSS outputs	3,00	3,00	4,00	2,00	4,00	1,00	3,67	2,00
Data Provider level	Economic analysis	3,00	2,00	3,00	2,00	4,00	1,00	3,33	1,67
	Data sampling and delivery	4,00	2,00	3,00	3,00	4,00	1,00	3,67	2,00
Preferred learning method (please indicate)		lectures		lectures		lectures		lectures	

Rwanda

Target group	Topics	Relevance for DSS Group 1	Skills already available Group 1	Relevance for DSS Group 2	Skills already available Group 2	Average Relevance for DSS Score*	Average Skills already available Score**
Management level	The project	4	1	4	1	4	1
	NB-DSS legal framework	4	2	4	2	4	2
	Demos	4	1	2	1	3	1
	Advantages	4	1	3	2	3,5	1,5
	Case management functionality	4	1	2	1	3	1
	System functionality overview	4	1	2	1	3	1
	Economic analysis	4	1	2	1	3	1
Operator level	Database installation and administration	4	1	4	1	4	1
	Basic GIS software installation and administration	3	2	4	2	3,5	2
	IT system solution installation and administration	3	3	4	2	3,5	2,5
	Networking of the system	3	3	3	3	3	3
	Database structure, datasets, topology, topology rules	4	1	3	3	3,5	2
	Data formats and consistency	4	1	3	3	3,5	2
	Data migration procedures	4	1	4	2	4	1,5
Professional level (up to expert level)	Basic GIS training course	4	1	4	2	4	1,5
	Decision-making	4	1	4	2	4	1,5
	DSS solution components and modules, functionality	4	1	4	1	4	1
	DSS outputs	4	1	4	1	4	1
	Model and scenario building	4	1	4	1	4	1
	Economic analysis	4	1	4	1	4	1
Decision Maker level	Basic GIS training course	4	1	4	1	4	1
	Decision-making	4	1	4	1	4	1
	DSS solution components and modules, functionality	4	1	4	1	4	1
	DSS outputs	4	1	4	1	4	1
	Economic analysis	4	1	4	1	4	1
Data Provider level	Data sampling and delivery	4	1	4	1	4	1
Preferred learning method (please indicate)		lectures		lectures			

Sudan

Target group	Topics	Relevance for DSS
Management level	The project	3,76
	NB-DSS legal framework	3,6
	Demos	2,56
	Advantages	2,4
	Case management functionality	3,44
	System functionality overview	2,88
	Economic analysis	2,72
Operator level	Database installation and administration	4
	Basic GIS software installation and administration	3,84
	IT system solution installation and administration	3,44
	Networking of the system	3,44
	Database structure, datasets, topology, topology rules	3,2
	Data formats and consistency	1,12
	Data migration procedures	3,52
Professional level (up to expert level)	Basic GIS training course	3,44
	Decision-making	4
	DSS solution components and modules, functionality	3,04
	DSS outputs	3,36
	Model and scenario building	3,52
	Economic analysis	2,64
Decision Maker level	Basic GIS training course	3,44
	Decision-making	2,88
	DSS solution components and modules, functionality	2,96
	DSS outputs	2,88
	Economic analysis	2,96
Data Provider level	Data sampling and delivery	3,52
Preferred learning method (please indicate)		

Tanzania

Target group	Topics	Relevance for DSS Group 1	Skills already available Group 1	Relevance for DSS Group 2	Skills already available Group 2	Relevance for DSS Group 3	Skills already available Group 3	Relevance for DSS Group 4	Skills already available Group 4	Average Relevance for DSS Score*	Average Skills already available Score**
Management level	The project	4	3	4	2	4	2	3	2	3,75	2,25
	NB-DSS legal framework	4	2	4	1	4	3	3	2	3,75	2
	Demos	3	2	4	1	4	3	4	2	3,75	2
	Advantages	3	2	3	1	4	3	3	3	3,25	2,25
	Case management functionality	4	3	4	1	1	2	3	2	3	2
	System functionality overview	2	2	4	1	4	2	3	3	3,25	2
	Economic analysis	3	3	4	2	4	3	4	1	3,75	2,25
Operator level	Database installation and administration	4	2	4	2	4	2	4	2	4	2
	Basic GIS software installation and administration	4	2	4	3	4	2	4	2	4	2,25
	IT system solution installation and administration	4	3	4	2	4	3	4	2	4	2,5
	Networking of the system	4	3	4	2	4	3	4	2	4	2,5
	Database structure, datasets, topology, topology rules	4	3	4	2	4	2	4	1	4	2
	Data formats and consistency	4	2	4	2	4	2	4	1	4	1,75
Professional level (up to expert level)	Data migration procedures	4	2	4	1	4	2	4	1	4	1,5
	Basic GIS training course	4	2	4	3	4	2	4	2	4	2,25
	Decision-making	4	2	4	2	4	2	2	3	3,5	2,25
	DSS solution components and modules, functionality	4	1	4	1	4	2	4	2	4	1,5
	DSS outputs	4	2	4	2	4	3	4	1	4	2
	Model and scenario building	4	2	4	2	4	2	4	1	4	1,75
	Economic analysis	4	3	4	3	3	3	3	2	2,75	2,75
Decision Maker level	Basic GIS training course	4	2	4	2	2	2	2	2	3	2
	Decision-making	4	1	4	2	3	2	3	1	3,5	1,5
	DSS solution components and modules, functionality	4	1	4	1	1	2	2	2	2,75	1,5
	DSS outputs	4	1	4	2	4	2	2	2	3,5	1,75
	Economic analysis	4	1	4	3	4	3	3	2	3,75	2,25
Data Provider level	Data sampling and delivery		3	4	3	4	2	3	2	2,75	2,5
Preferred learning method (please indicate)		lectures	e-learning	lectures		lectures		lectures	e-learning	lectures	

Uganda

Target group	Topics	Relevance for DSS Group 1	Skills already available Group 1	Relevance for DSS Group 2	Skills already available Group 2	Relevance for DSS Group 3	Skills already available Group 3	Average Relevance for DSS Score*	Average Skills already available Score**
Management level	The project	4	2	4	2	4	2	4,00	2,00
	NB-DSS legal framework	4	2	4	2	4	2	4,00	2,00
	Demos	3	1	3	1	4	1	3,33	1,00
	Advantages	4	2	3	2	3	1	3,33	1,67
	Case management functionality	2	2	4	1	3	1	3,00	1,33
	System functionality overview	4	2	3	1	4	1	3,67	1,33
	Economic analysis	1	1	4	3	4	3	3,00	2,33
Operator level	Database installation and administration	4	1	4	3	4	3	4,00	2,33
	Basic GIS software installation and administration	4	4	4	3	4	3	4,00	3,33
	IT system solution installation and administration	4	1	3	4	4	3	3,67	2,67
	Networking of the system	4	4	4	3	4	2	4,00	3,00
	Database structure, datasets, topology, topology rules	4	4	3	3	4	1	3,67	2,67
	Data formats and consistency	4	4	4	2	4	2	4,00	2,67
	Data migration procedures	4	4	4	2	3	2	3,67	2,67
Professional level (up to expert level)	Basic GIS training course	4	4	4	3	4	3	4,00	3,33
	Decision-making	4	4	4	2	4	2	4,00	2,67
	DSS solution components and modules, functionality	4	1	4	2	4	1	4,00	1,33
	DSS outputs	4	1	4	2	4	1	4,00	1,33
	Model and scenario building	4	1	4	1	4	1	4,00	1,00
	Economic analysis	4	4	3	3	4	2	3,67	3,00
Decision Maker level	Basic GIS training course	4	4	3	3	4	2	3,67	3,00
	Decision-making	2	4	4	3	4	1	3,33	2,67
	DSS solution components and modules, functionality	4	1	4	1	3	1	3,67	1,00
	DSS outputs	4	1	4	1	4	1	4,00	1,00
	Economic analysis	4	4	2	3	3	2	3,00	3,00
Data Provider level	Data sampling and delivery	4	1	4	2	4	3	4,00	2,00
Preferred learning method (please indicate)		lectures		lectures		lectures		lectures	