



Groundwater Resources Governance in Transboundary Aquifers (GGRETA Project)

Stampriet - Kalahari/Karoo Aquifer Case Study

SUMMARY OF THE TECHNICAL WORKSHOP ON DATA HARMONIZATION AND JOINT ASSESSMENT

Birchwood Hotel and Conference Centre, Johannesburg (South Africa)

23-26 February 2015

DRAFT

BACKGROUND

The Governments of Botswana, Namibia and South Africa, jointly with the UNESCO International Hydrological Programme (UNESCO-IHP) and the International Groundwater Resources Assessment Centre (IGRAC) organized a technical meeting on the assessment of the Stampriet Transboundary Aquifer System (STAS) within the framework of the “Groundwater Resources Governance in Transboundary Aquifers” (GGRETA) project, funded by the Swiss Agency for Development and Cooperation (SDC). The technical meeting was held on 23-26 February at Birchwood Hotel and Conference Centre, Johannesburg, South Africa.

The workshop reviewed harmonized data prepared by experts from the three countries, and prepared a workplan for the integrated assessment of the aquifer system which is based on a multidisciplinary approach to transboundary aquifers governance and management, addressing hydrogeological, socio-economic, environmental, legal, institutional, and gender aspects. The workshop was a major milestone to paving the way to the setting up of one of the first examples of a multi-country consultation/cooperation mechanism for the management and governance of a transboundary aquifer system.

OBJECTIVES

- To review and finalize content and presentation of harmonized hydrogeological, socio-economic, environmental, legal and institutional data.
- To discuss the content and process for the integrated assessment of the Stampriet Aquifer System and to identify roles, responsibilities and timetable for preparing the assessment.
- To agree on a detailed workplan for the joint assessment of the Stampriet Aquifer System.
- To discuss representation of spatially distributed data.
- To present the GGRETA project Information Management System (IMS).

The Agenda of the meeting is attached as Annex 1 to this report. The List of Participants is attached as Annex 2.

OUTCOMES

- Agreement on the designation of the aquifer system as the Stampriet Transboundary Aquifer System (STAS).
- Agreement on the delineation of the STAS.
- Agreement on a STAS hydrogeological conceptual model.
- Agreement on the content and presentation of harmonized hydrogeological, socio-economic, environmental, legal and institutional data.
- Harmonization of the national assessment of the trans-boundary legal and institutional framework for the STAS, based on the national data collected and reviewed to-date.
- Agreement on a workplan to finalize harmonization of the national sets of STAS-related (hydrogeological, and socio-economic and environmental) data collected and reviewed to-date by 31 March 2015 (Table 1).
- Agreement on a workplan to finalize representation of spatially distributed data (e.g. maps) by 10 April 2015 (Table 2).
- Agreement on a workplan for the preparation of the integrated aquifer assessment report by 22 May 2015 (Table 3). A complete draft of the report is due by 30 April 2015.
- Official appointment of new South Africa National Coordinator, Mr. Kwazikwakhe Majola (Department of Water and Sanitation).

BRIEF SUMMARY

Day 1 of the workshop started with a presentation by Mr. Ross (GGRETA Project Coordinator, UNESCO- IHP) on the objectives of the workshop (i.e. reviewing and finalizing harmonization of hydrogeological, socio-economic, environmental, legal and institutional data, and preparation of a workplan for the integrated assessment report of the Stampriet Aquifer system). This session also included presentations on the preparation of data for the project's Information Management System (IMS) by Ms. Van Dalen (Researcher, IGRAC), and an overview of data availability, data gaps and approaches for finalizing a harmonized data set by Mr. Kirchner (Regional Project Coordinator). Discussions on the preparation and presentation of maps were also held, and led to agreements on

the designation of the aquifer system as the Stampriet Transboundary Aquifer System (STAS), and on the delineation of the STAS.

The remaining sessions of Day 1 focused on reviewing approaches for harmonizing data for individual indicators. The National Technical Transboundary Aquifer Groups (NTTGs) worked in three groups of specialists in parallel sessions (Hydrogeology, Socioeconomic/environmental, and Legal/institutional). Key achievements of parallel sessions discussions include an agreement on the STAS conceptual model (Hydrogeology), further definition of harmonized data on natural groundwater quality, groundwater pollution, groundwater abstraction and population (socioeconomic and environmental), and harmonized scores for transboundary legal and institutional indicators resulting in a harmonized assessment (Legal/institutional).

Day 2 of the workshop started with presentations on the calculation of GGRETA project methodology indicators by Ms. Benedicto van Dalen (Researcher, IGRAC), the framework and contents of the integrated aquifer system assessment report by Mr. Ross, and corresponding roles and responsibilities by Mr. Kenabatho (Regional Assessment Coordinator). Based on the framework and contents of the integrated aquifer system assessment report (Table 3), NTTGs worked again in parallel sessions dedicated to discussing biophysical drivers including climate change, aquifer characterization, state of the resource and trends (Hydrogeology), population and development drivers, groundwater quality and utilization and trends (Socioeconomic/environmental), and policy, legal and institutional framework and evolution (Legal/institutional). Key achievements of day 2 included an agreement on the spatially distributed data (e.g. maps) that will be presented in the integrated aquifer system assessment report (Table 2), development of an outline for the final write up of the legal and institutional component (Annex 3), and agreement on milestones for domestic legal and institutional assessment.

Day 3 of the workshop (morning session) was dedicated to reaching an agreement on a detailed workplan to finalize the integrated aquifer system assessment report, as well as on the allocation of tasks and deadlines (Table 3). Ms. Benedicto van Dalen also made a preliminary demonstration of the GGRETA project Information Management System (IMS), which is currently being finalized. The remaining session of Day 3 was allocated to data exchange and technical sessions on representation on spatially distributed data (e.g. maps).

Day 4 of the workshop continued the data exchange and technical sessions on representation on spatially distributed data (e.g. maps) that started on Day 3. Mr. Coetzee (Senior Hydrogeologist, CGS) was tasked to create most of the spatial representation (i.e. maps) for the aquifer is not clearly stated in the text. Also, it was agreed that Mr. Kirchner will avail the EndNote Reference list (tool for publishing and managing references) to the teams. The workshop was closed on Day 4 with a summary of the outcomes of the workshop, which provided useful pointers for the project's ultimate goal of arriving at a consultation mechanism for cooperation among the STAS countries:

- drawdown of STAS aquifer levels as a result of abstractions does not appear to be an issue at present and in the near future;
- pollution of groundwater appears to be confined at present to natural causes, with limited human pollution – but with potential for increased human impacts in future;

- human impacts on the transboundary aquifer, natural recharge processes and groundwater in the STAS could increase rapidly if large-scale irrigation or mining commence. Therefore it is important to establish effective monitoring of the condition and use of the aquifer.

During the meeting discussions commenced on options for a multi-country consultation mechanism to improve the management of the transboundary aquifer, including a mechanism based on an existing regional institution (Orange-Senqu River Basin Commission – ORASECOM), or a separate intergovernmental mechanism. Options for a multi-country mechanism will be further examined and presented to High-Level Ministry representatives during the 4th Regional Technical Workshop to be held from 5-8 May in Gaborone, Botswana.

	Task	Product/Deliverable	Deadline
1	Data Exchange between national and specialist groups	All project data available to all project team members	From 6 March 2015 onwards
2	Data Format Harmonised at National level	All national data in standardized format	13 March 2015
3	Data Harmonisation at TBA level	Harmonised data Report	31 March 2015

Table 1: Workplan to finalize harmonization of the national sets of STAS-related (hydrogeological, and socio-economic and environmental) data collected and reviewed to-date (by March 31)

	Map	Deadline
1	Baseline map The baseline map includes: <ul style="list-style-type: none"> - Physical aquifer system delineation - Administrative units - National boundaries - Population centres - Boreholes (if possible) - River network (and pans if possible) - Main roads 	6March 2015
2	Conceptual model + cross-sections The conceptual model includes: <ul style="list-style-type: none"> - Kalahari recharge - Aoub and Nossob recharge areas - Discharge area (Salt blocks) - Groundwater flow - Main irrigation areas Cross-sections will be obtained by extending/extrapolating 2 cross-sections made available from the Namibia Hydrogeological Map to Botswana and South Africa.	6March 2015 10April 2015
3	Kalahari aquifer thickness	4March 2015
4	Topography	4March 2015
5	Land use	4March 2015
6	Groundwater quality Groundwater quality information will include: <ul style="list-style-type: none"> - Point information for 1) Kalahari and 2) Aoub/Nossob aquifers (when possible) - Information on Fluoride, Nitrate, Sulfate and TDS 	10April 2015
7	Groundwater risk and potential pollution The groundwater risk and potential pollution map will provide point (e.g. borehole) and block information (e.g. farms)	10April 2015
8	Population The population map will provide information on settlements and distribution of population	10April 2015

Table 2: Workplan to finalize representation of spatially distributed data (by April 10)

Chapter	Complete draft
1-Intro/Background/objectives	13 March 2015
2-Drivers & Pressures on the Stampriet Aquifer System	24 April 2015
3-Hydrogeological characterization & Conceptual Model of the Stampriet Aquifer System	24 April 2015
4-Socioeconomic and environmental features including gender related issues	24 April 2015
5-Legal and Institutional Setting including gender related issues	24 April 2015
6-Impacts of changes in use, availability and quality of GW on resource dependent communities and the environment	24 April 2015
7-Policy, legal and institutional responses	24 April 2015
8-Findings and conclusions from the assessment	30 April 2015
9- Options for a multi-country consultation mechanism	30 April 2015

Table 3: Framework of the integrated aquifer system assessment report (by May 2015)

Annex 1 –Final Agenda



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development
and Cooperation SDC



Groundwater Resources Governance in Transboundary Aquifers (GGRETA Project)

Stampriet - Kalahari/Karoo Aquifer Case Study

TECHNICAL WORKSHOP ON THE GOVERNANCE OF THE STAMPRIET TRANSBOUNDARY AQUIFER: DATA HARMONIZATION AND JOINT ASSESSMENT

Johannesburg, 23-26 February 2015

Final agenda

DAY 1 • Monday, 23 February 2015

Objectives:

- To review and finalize content and presentation of harmonized hydrogeological, socio-economic, environmental legal and institutional data

9:00-10:15	Introduction to the technical meeting	Chair: Ramogale Sekwele, Scientist Manager: Coordination and Liaison, Department of Water and Sanitation, South Africa
9:00-9:20	Introduction to the project technical meeting objectives and organization, including integrated aquifer assessment	Andrew Ross, GGRETA Project Coordinator, UNESCO- IHP, France
9:20-9:30	Preparation of data for project Information Management System (IMS)	Daniela Benedicto Van Dalen, Researcher, IGRAC, The Netherlands
9:30-9:40	Preparation and presentation of maps	Henk Coetzee, Senior Hydrogeologist, Council for Geoscience, South Africa
9:40-9:55	Overview of harmonized data	Jurgen Kirchner, Regional Project Coordinator
09:55-10:15	Questions and discussion	

10:15-10:30	Coffee break	
10:30-12:30	Review of harmonized data and indicators	
<i>10:30-12:30</i>	Parallel sessions <ul style="list-style-type: none"> ○ Hydrogeology ○ Socioeconomic/environmental ○ Legal/institutional 	Parallel session facilitators: <ul style="list-style-type: none"> ○ Jurgen Kirchner, Regional Project Coordinator ○ Andrew Ross, GGRETA Project Coordinator ○ Stefano Burchi, GGRETA Project Legal Expert
12:30-14:00	Lunch	
14:00-15:30	Parallel sessions: review of harmonized data and indicators (continued)	
15:30-15:45	Coffee break	
15:45-17:00	Presentation of key results from harmonised data and indicators including data shortfalls and responses	
	Plenary	
<i>15:45-16:15</i>	Reports on the outcomes of parallel sessions (3 x 10 min)	
<i>16:15-17:30</i>	Discussion	

DAY 2 • Tuesday, 24 February 2015, Johannesburg

Objectives:

- **To discuss the content and process for the integrated Stampriet aquifer assessment and to identify roles, responsibilities and timetable for preparing the assessment**

9:00-10:30	Introduction and overview to integrated aquifer assessment	Chair: Aina Ileka, Chief Hydrogeologist, Department of Water Affairs, Namibia
<i>9:00-9:20</i>	Aquifer assessment: analytical framework and contents	Andrew Ross, GGRETA Project Coordinator
<i>9:20-9:30</i>	Indicators for integrated aquifer assessment	Daniela Benedicto Van Dalen, IGRAC, The Netherlands
<i>09:30-09:45</i>	Aquifer assessment process: roles and responsibilities	Piet Kenabatho, Regional Assessment Coordinator

09:45-10:30	Discussion	
10:30-10:45	Coffee break	
10:45-12:30	Components of integrated aquifer assessment	Chair: Aina Ileka, Department of Water Affairs, Namibia
10:45-12:30	Parallel sessions <ul style="list-style-type: none"> ○ Hydrogeology (Biophysical drivers including climate change, aquifer characterization, and state of the resource including trends) ○ Socioeconomic/environmental (Population and development drivers, groundwater quality and utilization including trends) ○ Legal/institutional (Policy, legal and institutional framework and evolution) 	Parallel session facilitators: <ul style="list-style-type: none"> ○ Jurgen Kirchner, Regional Project Coordinator ○ Andrew Ross, GGRETA Project Coordinator ○ Stefano Burchi, GGRETA Project Legal Expert
12:30-14:00	Lunch	
14:00-16:00	Components of integrated aquifer assessment (continued)	
	Parallel sessions <ul style="list-style-type: none"> ○ Hydrogeology ○ Socioeconomic/environmental ○ Legal/institutional 	Parallel session facilitators: <ul style="list-style-type: none"> ○ Jurgen Kirchner, Regional Project Coordinator ○ Andrew Ross, GGRETA Project Coordinator ○ Stefano Burchi, GGRETA Project Legal Expert
16:00-16:15	Coffee break	
16:15-17:00	Components of integrated aquifer assessment (continued)	
	Parallel sessions <ul style="list-style-type: none"> ○ Hydrogeology ○ Socioeconomic/environmental ○ Legal/institutional 	Parallel session facilitators: <ul style="list-style-type: none"> ○ Jurgen Kirchner, Regional Project Coordinator ○ Andrew Ross, GGRETA Project Coordinator ○ Stefano Burchi, GGRETA Project Legal Expert

17:00-17:30	Presentation of key results from components of integrated aquifer assessment	
<i>17:00-17:15</i>	Reports on the outcomes of parallel sessions (3 x 5 min)	
<i>17:15-17:30</i>	Discussion	

DAY 3 • Wednesday, 25 February 2015, Johannesburg

Objective:

- To agree on a detailed workplan for the joint assessment of the Stampriet aquifer
- To discuss representation of spatially distributed data

9:00-12:00	Workplan for joint assessment	Chair: Mr Kwazikwakhe Majola, Department of Water and Sanitation, South Africa
<i>9:00-10:45</i>	Detailed workplan for integrated aquifer assessment	<ul style="list-style-type: none"> ○ Andrew Ross, GGRETA Project Coordinator ○ Piet Kenabatho, Regional Assessment Coordinator
10:45-11:00	Coffee break	
<i>11:00-12:00</i>	Discussion and adoption of workplan for integrated assessment	
12:00-13:30	Lunch	
13:30-14:30	Communication and data sharing	Tales Carvalho Resende, UNESCO-IHP, France
14:30-18:00	Technical session on representation on spatially distributed data	Session facilitators: <ul style="list-style-type: none"> ○ Henk Coetzee, Council for Geoscience, South Africa ○ Tales Carvalho Resende, UNESCO-IHP, France ○ Daniela Benedicto Van Dalen, Researcher, IGRAC, The Netherlands
<i>14:30-15:00</i>	The GGRETA Information Management System (IMS) and input of information into the system (including examples)	Daniela Benedicto Van Dalen, IGRAC, The Netherlands
<i>15:00-15:30</i>	Discussion	
<i>15:30-18:00</i>	Representation on spatially distributed data	

16:00-16:30	Coffee break	
16:30-18:00	Representation on spatially distributed data (continued)	

DAY 4•Thursday, 26 February 2015, Johannesburg

Objective:

- To discuss representation of spatially distributed data
- To present the GGRETA project Information Management System (IMS)

09:00-12:30	Technical session on representation of spatially distributed data (continued from day 3) and introduction to the project Information Management System (IMS)	Session facilitators: <ul style="list-style-type: none"> ○ Henk Coetzee, Council for Geoscience, South Africa ○ Tales Carvalho Resende, UNESCO-IHP, France ○ Daniela Benedicto Van Dalen, IGRAC, The Netherlands
9:00-11:00	Representation of spatially distributed data (continued from day 3)	
11:00-11:30	Coffee break	
11:30-12:30	Conclusions and follow up actions from sessions on representation of spatially distributed data	
12:30-13:00	Closing remarks	Chair: Andrew Ross, GGRETA Project Coordinator
12:30-13:00	Summary of the outcomes of the workshop	Tales Carvalho Resende, UNESCO-IHP, France
13:00-14:00	Lunch	

Annex 2 – Final List of Participants

Technical Workshop on the Governance of the Stampriet Transboundary Aquifer: Data Harmonization and Joint Assessment, Johannesburg, South Africa

	<i>Participant</i>	<i>Organization</i>	<i>Position</i>	<i>Contact details</i>
BOTSWANA				
1.	Mr. Piet Kenabatho (National Coordinator)	University of Botswana Department of Environmental Science	Senior Lecturer	kenabatho@mopipi.ub.bw T : +267 3552509 M : +267 74599317
2.	Mr. Gaolatlhe Bhutto Lentswe (Technical Specialist – Hydrogeology)	Independent Consultant	Hydrogeologist	lentswegb@yahoo.co.uk M:+26771747129/72224628/73985634
3.	Mr. Odirile Otto Itumeleng (Technical Specialist – Legal and institutional)	Independent Consultant	Attorney	odirileitum@yahoo.co.uk M:+26772225485
4.	Ms. Bothepha Moseitlhi (Technical Specialist - Socioeconomic environmental)	University of Botswana Department of Environmental Science	Lecturer	bothepha.moseitlhi@mopipi.ub.bw bothepha.moseitlhi@gmail.com T:+267 3555029 M:+26774583944
NAMIBIA				
5.	Ms. Aina N. Iлека (National Coordinator)	Department of Water Affairs Ministry of Agriculture, Water and Forestry	Chief Hydrogeologist	ilekaa@mawf.gov.na T : +264 61 208 7102 M: + 264 81 144 8972

6.	Ms. Lydia Joel (Technical Specialist – Hydrogeology)	Independent Consultant	Hydrogeologist	Lydiajoel91@gmail.com M: + 264 (0) 816 237 441
7.	Ms. Viviane Kinyaga (Technical Specialist – Legal and institutional)	Independent Consultant		Viviane.kinyaga@gmail.com T: +264 61 377 500 M: +264 855 850 669
8.	Mr. Don Muroua (Technical Specialist - Socioeconomic environmental)	Independent Consultant	Project Manager – Environmental Projects	donm@iway.na M: +264 (0) 81 350 3086
9.	Ms. Gettie Mulokoshi	Department of Water Affairs Ministry of Agriculture, Water and Forestry	Hydrologist	MulokoshiG@mawf.gov.na T: +264 61 2087075 M: +264 81 6209276
SOUTH AFRICA				
10.	Mr. Kwazikwakhe Majola (National Coordinator)	Department of Water and Sanitation	Hydrogeologist	SekweleR@dwa.gov.za T : +27 12 336 8867 M : +27 82 940 2643
11.	Mr. Ramogale Sekwele	Department of Water and Sanitation	Scientific Manager: Coordination and Liaison	SekweleR@dwa.gov.za T : +27 12 336 8867 M : +27 82 940 2643
12.	Ms. Joyce Leshomo (Technical Specialist – Hydrogeology)	Council for Geoscience	Senior Hydrogeologist	jleshomo@geoscience.org.za T: +27 12 841 1079 M: +27 83 878 7145
13.	Mr. Bantu Hanise (Technical Specialist - Socioeconomic environmental)	Council for Geoscience	Socioeconomic and environmentalist	Ntsoendoe@gmail.com / bhanise@geoscience.org.za T : +27 12 841 1381 M : +27 72 544 3894

14.	Adv. Mpelegeng Lebeloane (Technical Specialist – Legal and institutional)	Department of Water and Sanitation	Director: Legal Services	lebeloanem@dwa.gov.za T: +27 12 336 7391
15.	Dr. Henk Coetzee	Council for Geoscience	Senior Hydrogeologist	henkc@geoscience.org.za
16.	Mr. Sakhile Mndaweni	Department of Water and Sanitation	Scientific Manager	mndawenis@dwa.gov.za T: +27 12 336 8764
17.	Mr. Jan Makhetha	Department of Water and Sanitation	Scientist Production	makhethaj@dwa.gov.za T: +27 53 830 8800
18.	Ms. Nancy Motebe	Department of Water and Sanitation	Senior Scientific Manager	moteben@dwa.gov.za T: + 27 12 336 8073
19.	Mr. Bayanda Zenzile	Department of Water and Sanitation	Hydrogeologist	zenzileb@dwa.gov.za T: +27 12 336 7309
REGIONAL COORDINATION				
20.	Prof. Jurgen Kirchner (Regional Coordinator)	Independent Consultant	Senior Hydrogeologist	g-wi@hotmail.de T: +264 61 222207 M: +264 81 2976543
PROJECT TEAM				
21.	Mr. Andrew Ross	UNESCO – IHP Paris	Consultant	a.ross@unesco.org T : +33 (0)1 45 68 39 43
22.	Mr. Tales Carvalho Resende	UNESCO – IHP Paris	Consultant	t.carvalho-resende@unesco.org T : +33 (0)1 45 68 39 65
23.	Ms. Daniela Benedicto Van Dalen	IGRAC - International Groundwater Resources Assessment Centre	Researcher	daniela.benedicto@un-igrac.org
24.	Mr. Stefano Burchi	AIDA – International Association for Water Law	Senior Legal Specialist	stefano.burchi@gmail.com T : +33 (0)1 45 68 39 65
25.	Mr. Willi	Past President of IAH	Senior	willistr@online.de

	Struckmeier		Hydrogeologist	T : +49 51 36 89 31 84
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