

Governance of Groundwater Resources in Transboundary Aquifers (GGRETA Project)

- Phase 2 -

Stampriet Transboundary Aquifer System (STAS) Case Study

TECHNICAL INCEPTION MEETING

19 September 2016

Birchwood Hotel OR Tambo, Johannesburg, South Africa

- DRAFT FINAL REPORT -

1. BACKGROUND

Within the framework of the “Governance of Groundwater Resources in Transboundary Aquifers” (GGRETA) project (2013-2015), funded by the Swiss Agency for Development and Cooperation (SDC), the Governments of Botswana, Namibia and South Africa, jointly with the UNESCO International Hydrological Programme (UNESCO-IHP) undertook an in-depth multi-disciplinary assessment of the Stampriet Transboundary Aquifer System (STAS). The importance of the STAS to the region draws from the fact that it is the only permanent and dependable water resource in the area, which covers 87,000 sq. km from Central Namibia into Western Botswana and South Africa’s Northern Cape Province.

The assessment was carried out based on a multi-disciplinary methodology developed by UNESCO covering hydrogeology, socio-economic and environmental, and legal and institutional aspects by a team familiar to the area and composed of professionals of Botswana, Namibia and South Africa based on a multi-disciplinary methodology developed by UNESCO covering hydrogeology, socio-economic and environmental, and legal and institutional aspects. Apart from collecting and studying relevant literature for assessment and diagnostics, the team spent much attention to compiling basic data and to GIS mapping. In total, more than 60 thematic maps were prepared and have been uploaded to the Information Management System (IMS) developed by the project. Building on the results of the assessment, Countries have launched discussions to develop concrete policies and strategies geared towards cooperative management and governance of the STAS. The establishment of a Multi-Country Cooperation Mechanism (MCCM) would be the first example of institutionalized transboundary aquifer cooperation in Southern Africa.

The official announcement of a second phase of the project was made by the Government of Switzerland at the Final Meeting of the first phase of the project, held on 15-16 December 2015 at UNESCO Headquarters. The discussions held at this meeting focused on the finalization of the assessment report, and on receiving recommendations from Government Officials for the second phase of the project. It was decided that all the information approved on the assessment report should be in public view, and that all other information should be specifically approved by Countries before going public. It was also agreed that activities of GGRETA Phase 2 should be generated from the assessment report and decided at an Inception Meeting. It was agreed that activities under each outcome will be further developed as per country's need, without limiting to GGRETA Phase 2 funds, but also considering co-funding from Countries and existing projects in the Southern Africa Development Community (SADC).

A work plan of activities for GGRETA Phase 2 2016-2018 was then established in accordance to recommendations and suggestions provided by Government Officials from Botswana, Namibia and South Africa. While the first phase of the project focused on an in-depth assessment of the STAS which allowed establishing a shared science based understanding of the resource, activities of the second phase of the project will shift its focus to strengthening groundwater governance at the national and transboundary levels, and technical capacity of the countries sharing the aquifer as a means to support the process of establishment of a Multi-Country Cooperation Mechanism (MCCM).

This report presents the decisions taken during the GGRETA Phase 2 - STAS Technical Inception Meeting held on 19 September 2016, in which Representatives from the three Countries confirmed the adoption of the main objectives and outcomes presented in the project document, and considered the detailed workplan for action to be undertaken in the second phase from September 2016 to April 2017.

2. OVERVIEW OF GGRETA PHASE 1 RESULTS AND LESSONS LEARNT

A component of the GGRETA Phase 2 - STAS Technical Inception Meeting was devoted to consider the main results and lessons learnt of the GGRETA Phase 1 project.

The GGRETA Phase 1 project has allowed establishing a shared science based understanding of the STAS. The in-depth assessment of the STAS carried out by a team familiar to the area and composed of professionals of Botswana, Namibia and South Africa who regularly met in the 6 regional meetings that were held in the three countries of the STAS in a rotation basis. Such meetings also included 2 stakeholder consultation meetings which counted with the participations of a broader audience (e.g. regional organizations, farmers, NGOs, ...). **Based on the data collected, analyzed and harmonized by national experts, a joint STAS borehole database with information on more than 10 attributes for approximately 6000 boreholes was set up.** Such database was the cornerstone to prepare more than 60 thematic maps providing information on groundwater levels, yield, and quality. All collected, analyzed and harmonized data was shared Countries and has been uploaded to the Information Management System (IMS) developed by the project in consultation with national authorities.

Countries have agreed on a hydrogeological conceptual model (covering recharge and discharge areas and rates, groundwater flow, and potential pollution risk areas). Nevertheless, the findings and combined experiences of the assessment team have revealed a number of challenges. Lack of monitoring data (climate, groundwater abstraction, water levels, water quality) seriously hampers a systematic diagnostic analysis. Groundwater quantity stress has not been observed. Lack of monitoring may be an explanation, but the exceptionally low intensity of groundwater withdrawal certainly plays a major role. Considering the importance of the STAS for the socio-economic development of the area, particular attention should be given to reach a joint management by the 3 Countries to avoid, that under scenarios of population growth and severe climatic changes, the demand for water in the region increase significantly and consequently prevent overexploitation and non-sustainable management of the STAS. Therefore, it is very important to initiate effective control of groundwater quantity, e.g. by some initial practical steps such as solving the problem of water spillage by leaking boreholes in the Auob aquifer and preventing future problems by improved regulation of drilling. Groundwater quality has its natural variations. Most notable are generally poor conditions in or near the Salt Block zone. Pollution, however, may also lead to groundwater quality degradation elsewhere in the area.

The shallower and usually phreatic Kalahari aquifers are vulnerable to pollution; in particular, in the Namibian sector the pollution risk is often medium to high due to irrigated agriculture (using fertilizers and pesticides) and environmentally unfriendly sanitation and waste disposal practices. Such aquifers have to be managed properly to prevent an increase of pollution; not only to preserve the status of these layers of the STAS, but also to avoid that the deterioration of its quality induce an increase of pumping of the underlying layers (Auob and Nossob confined aquifers), creating conditions of stress and overexploitation in the future.

Partly from the groundwater management point of view and partly for health reasons, there is scope for enhancing water supplies and even more for improving sanitation in the entire area. The assessment report highlights that **measures to prevent or counteract potential depletion and pollution problems** are the following:

- Rehabilitation of leaking wells, by introducing and implementing regulations on well construction and by effective well licensing procedures.
- Improvement of the water and sanitation situation, including sewerage and wastewater treatment provisions.
- Protection of key recharge zones that may contribute to conserve the resources.
- Raising awareness programs among the area's inhabitants.
- Enhancement of the capacity of the institutions responsible for groundwater management in the area.

There are still areas of the STAS that present data gaps. In order to be able to evaluate how the aquifer system responds to human and natural impacts (e.g. abstraction and climatic variation), **Countries recognized that implementing a monitoring system (groundwater levels and groundwater abstraction) is a priority. Moreover, Countries have also recognized that a numerical simulation model of the STAS would be indispensable to enable informed decisions on sustainable management of the aquifer system.**

A domestic policy, legal and institutional framework for groundwater is in place in all the three STAS countries. The laws of the three countries regulate abstraction and potential point-source pollution through a permit system. When it comes to non-point source pollution control, other laws step in, typically environmental protection and Mining Acts. From the domestic legal and institutional perspective, actions can be taken to further improve national legislation to adapt to the challenges ahead of the aquifer. However, it has been recognized that **strengthening domestic capacities in implementation and enforcement is necessary to support cooperation for the management of the STAS**. The over-arching objective of a Multi-Country Cooperation Mechanism for STAS (MCCM) would then assure the adequate transition from the GGRETA project-driven cooperation in the study and characterization of STAS to institutionalized cooperation among the STAS countries, beyond the life of the project. In the short-term, the specific objective of the MCCM is to continue the joint study of STAS, also by generating a steady flow of agreed additional/fresh data and information feeding the Information Management System (IMS) for STAS, generated by the GGRETA project. In the long-term, as cooperation takes hold and matures, the MCCM's institutionalized cooperation objective may expand from data collection and exchange to joint strategizing and advising STAS countries on management issues of the STAS groundwater resources. Based on the assessment undertaken, two examples of possible structures of a MCCM for the STAS have been identified and presented to Countries. One builds upon national government capacities and institutions in the three STAS countries, and seeks to synergize them towards a common purpose, i.e., the cooperative husbanding of the STAS and its resources. The other model taps into the regional existing institution whose mandate comes closest to the STAS, i.e., Orange-Senqu River Commission (ORASECOM), and nests in it dedicated attention to the STAS. The Government officials from the Department of Water Affairs in Botswana, Namibia and South Africa decided to further develop studies in the second phase of the GGRETA project aiming at identification of the most appropriate structure of a MCCM.

Since the clearance of the STAS assessment report by Countries in April 2017, GGRETA Phase 1 results were presented in several renowned international fora such as 7th Annual International Law and Transboundary Freshwater Training Workshop (Scotland - June, 2016), Africa Water Week (Tanzania - July, 2016), and World Water Week (Sweden - August, 2016). A large number of reports have been prepared by the project and a complete list is available in Annex 3. All reports are available online on the UNESCO-IHP Groundwater Portal (<http://www.groundwaterportal.org/project/ggreta>).

It should be highlighted that a recent **Position Paper released by SADC recommends that assessments of transboundary aquifers in the region should be prepared in line with the one for the STAS**.

2. OBJECTIVES OF THE GGRETA PHASE 2 STAS TECHNICAL INCEPTION MEETING

The Governments of Botswana, Namibia and South Africa, jointly with UNESCO-IHP organized the GGRETA Phase 2 - STAS Technical Inception Meeting on 19 September 2016 at Birchwood Hotel & OR Tambo Conference Centre in Johannesburg, South Africa.

The main objective of this meeting was to discuss, evaluate and agree upon the adoption of a detailed workplan for GGRETA activities for 2016-2017. Discussions undertaken at this meeting would then be

officially endorsed by High-Level Government Representatives at a High-Level Meeting to be held on 3-4 November 2016 at UNESCO Headquarters in Paris, France.

The Agenda of the meeting is attached as Annex 1 to this report. Government Officials from the three project countries attended the meeting. The List of Participants is attached as Annex 2.

3. DECISIONS AND OUTCOMES OF THE STAS TECHNICAL INCEPTION MEETING

The second phase of the project will **strengthen the technical capacity of the countries sharing the aquifer as a means to support the process of establishment of a Multi-Country Cooperation Mechanism (MCCM)**. Activities undertaken in GGRETA Phase 2 would also allow to promote a regional dialogue on coordination and harmonization of groundwater governance frameworks and guiding principles both at national and transboundary levels. As presented in the project document, GGRETA Phase 2 project implementation activities will include three outcomes, as follows:

Outcome 1 – Improved resource knowledge and monitoring based on recognition of the importance and vulnerability of transboundary groundwater resources

Main activities will be devoted to **develop a model for filling existing knowledge gaps** (e.g. through simulation scenarios, estimations), and **upgrading and updating the joint database and monitoring protocols** (e.g. for time series data collection). It was agreed that the model would be developed in collaboration with the FREEWAT project (2015-2018) for which UNESCO-IHP is part of the Consortium. The FREEWAT project is an ICT project funded by the European Commission for improving water resources management through a GIS integrated modelling platform. It intends to integrate several existing free software modules (e.g. QGIS, MODFLOW, MT3DMS) in one single and user-friendly GIS environment (FREEWAT platform). Countries have also agreed to nominate a Core Group of national experts that will be trained by UNESCO-IHP to develop the model, simulation scenarios, and estimations. Within the framework of these trainings, national experts will be also trained to become trainers, and consequently to replicate and apply techniques to other groundwater bodies in their respective Countries. The Terms of Reference of the Core Group of national experts in charge of the model is presented in Annex 5. A workplan from September 2016 to April 2017 is presented in Figure 1. From September to December 2016, activities will focus on software development and training of the trainers. From January to April 2017, the first application of the model and preliminary simulation results will be undertaken. From April 2017 to April 2018, final calibration and simulation scenarios will be undertaken. Upgrade and update of the joint database and monitoring protocols (e.g. for time series data collection) will be undertaken throughout the modelling exercise.

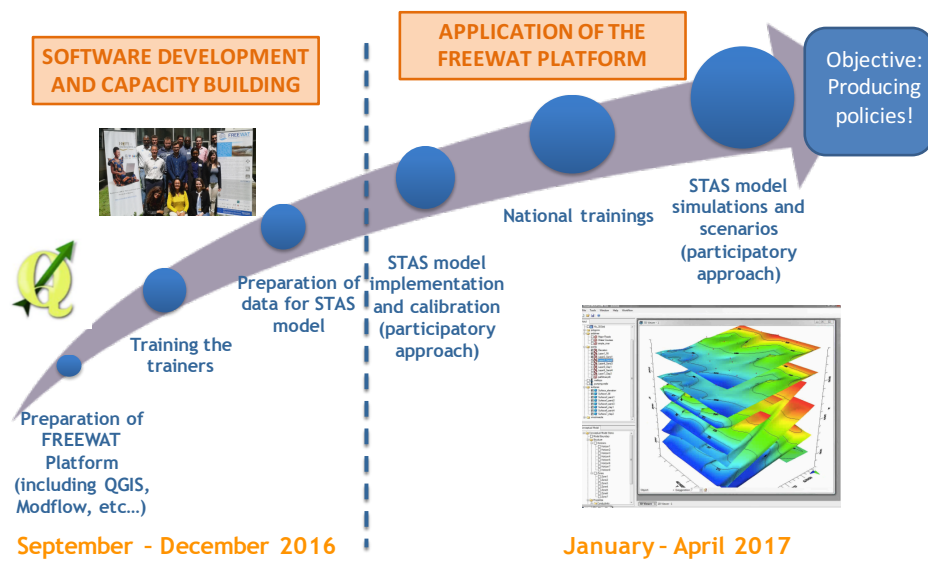


Figure 1 – Work-plan from September 2016 to April 2017 for the development of the STAS simulation model

Outcome 2 - Enhanced cross-border dialogue and cooperation based on development of shared management tools, and recommendations for governance reforms focused on improving livelihoods, economic development, gender equality and environmental sustainability

Main activities will consist in the **setting up and operationalization of a Core Working Group for the establishment of a Multi-Country Cooperation Mechanism (MCCM) for the governance and management of the STAS**. This Core Working Group will be composed by Officials from the Department of Water Affairs and Ministry of Foreign Affairs of each Country. Representatives of the Core Working Group Work will gather for the first time at the High-Level Meeting that will held at UNESCO Headquarters on 3-4 November 2016 in order to endorse the workplan activities discussed in this meeting. The Terms of Reference of the Core Working Group are presented in Annex 5.

Outcome 3 – Improved capacity in groundwater governance, hydro-diplomacy and gender, and effective communication aiming at replication of project experiences and approaches

Main activities will consist on **capacity-building training modules** from 2016 to 2018 on:

- Modelling (see Outcome 1),
- Legal and institutional aspects including groundwater governance at domestic and transboundary level, and hydro-diplomacy (see Outcome 2),
- Gender aspects (see Outcome 2).

These trainings will have a **“training for trainers” approach** and will come as cross-cutting support to Outcomes 1 and 2. It was agreed that a Core Working Group would be established for each module and that next trainings on legal and institutional (international and domestic water law) and gender aspects would be held during the 2nd Regional Meeting on Tools for the Sustainable Management of Transboundary Aquifers that will be organized by UNESCO-IHP, the International Water Management Institute (IWMI) and the SADC Groundwater Management Institute (GMI) in end November 2016. A

component of the meeting will be devoted to a training specifically devoted to the Draft Articles on the Law of Transboundary Aquifers (UN General Assembly Resolution 63/124). The Draft Articles are specific recommendations prepared by hydrogeologists from different regions with the support of UNESCO-IHP (Annex 7), and are a contribution to the work of the UN International Law Commission (ILC) that has developed the codification of technical guidelines into a draft Convention for Transboundary Aquifers.

It was decided that the overall organizational structure of GGRETA Phase 2 remains relatively similar to the one of the first phase (Annex 4). Countries decided that upon reception of the Terms of Reference of the different Core Working Groups (i.e. MCCM, modelling, legal and institutional, and gender) (Annex 5) they would provide official nomination of experts. A detailed workplan for each Outcome from September 2016 to April 2017 (first financial instalment) is presented in Annex 6.

- **STAS High-Level Meeting, 3-4 November 2016**

The final session of the meeting was devoted to provide additional information to participants about the High-Level Meeting that will be held on 3-4 November 2016 at UNESCO Headquarters. The objectives of this meeting are to officially validate GGRETA Phase 2 workplan and activities, and to discuss the way forward. The meeting would also be an opportunity to underpin the role of science in decision making in the context of transboundary aquifers cooperation, and to highlight the pilot role of the three Countries in paving the way for water cooperation in Africa to Regional Organizations Representatives such as the African Ministers' Council on Water (AMCOW), SADC and ORASECOM.

A part from its Permanent Delegates to UNESCO and High-Level Representative, Delegations from each Country should include 2-3 additional Officials from the Departments of Water Affairs and/or Ministries of Foreign Affairs. Final nominations should be submitted to UNESCO-IHP by end of September in order to start the travel arrangements accordingly.

Annex 1 – Final Agenda

Objectives:

- Discuss, evaluate and agree upon the adoption of the 2016-2017 workplan for GGRETA activities.
- Preparation of the STAS High-Level Meeting to be held on 3-4 November 2016 at UNESCO Headquarters in Paris, France.

8:30-10:30	Introduction to the GGRETA Phase 2 STAS Technical Inception Meeting	Chair: Ramogale Sekwele, Scientist Manager: Coordination and Liaison, Department of Water and Sanitation, South Africa
8:30-8:40	Opening remarks by UNESCO-IHP	Tales Carvalho Resende, GGRETA STAS Project Coordinator, UNESCO- IHP, France
8:40-8:50	Opening remarks by Member States	Peloteshweu Phofuetsile, Department of Water Affairs, Botswana Maria Amakali, Department of Water Affairs and Forestry, Namibia Ramogale Sekwele, Department of Water and Sanitation, South Africa
8:50-9:30	Overview of GGRETA Phase 1 results: <ul style="list-style-type: none"> - STAS assessment report - Communication outreach - GGRETA Phase 1 Final Meeting - Feedback from Member States 	Tales Carvalho Resende, GGRETA STAS Project Coordinator, UNESCO- IHP, France
9:30-10:30	Introduction to GGRETA Phase 2: <ul style="list-style-type: none"> - Background - Objectives - Structure - Budget - Feedback from Member States 	Tales Carvalho Resende, GGRETA STAS Project Coordinator, UNESCO- IHP, France
10:30-10:45	Coffee break	
10:45-12:30	Discussion on GGRETA Phase 2 activities and workplan (September 2016 – April 2017)	
10:45-11:30	Presentation of GGRETA Phase 2 activities and workplan (September 2016 – April 2017)	Tales Carvalho Resende, GGRETA STAS Project Coordinator, UNESCO- IHP, France

11:30-12:30	Discussion and adoption of GGRETA Phase 2 activities and workplan (September 2016 – April 2017)	
12:30-14:00	Lunch	
14:00-15:30	Preparation of the STAS High-Level Meeting (3-4 November 2016, UNESCO Headquarters in Paris, France)	
	<p>Presentation of the STAS High-Level Meeting:</p> <ul style="list-style-type: none"> - Background - Objectives - Logistics - Roles and responsibilities <p>Discussion and agreement on roles and responsibilities</p>	Tales Carvalho Resende, GGRETA STAS Project Coordinator, UNESCO- IHP, France
15:30-15:45	Coffee break	
15:45-16:15	Closing remarks	
15:45-16:15	Summary of the outcomes of the meeting	Tales Carvalho Resende, GGRETA STAS Project Coordinator, UNESCO- IHP, France
16:15-16:30	Final remarks by Member States	<p>Peloteshweu Phofuetsile, Department of Water Affairs, Botswana</p> <p>Maria Amakali, Department of Water Affairs and Forestry, Namibia</p> <p>Ramogale Sekwele, Department of Water and Sanitation, South Africa</p>





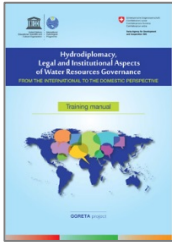

Background material available at:

<https://www.dropbox.com/sh/6nl5h9xuqr4gw5m/AABxyNaMQA1oFormIdHBw6Vka?dl=0>

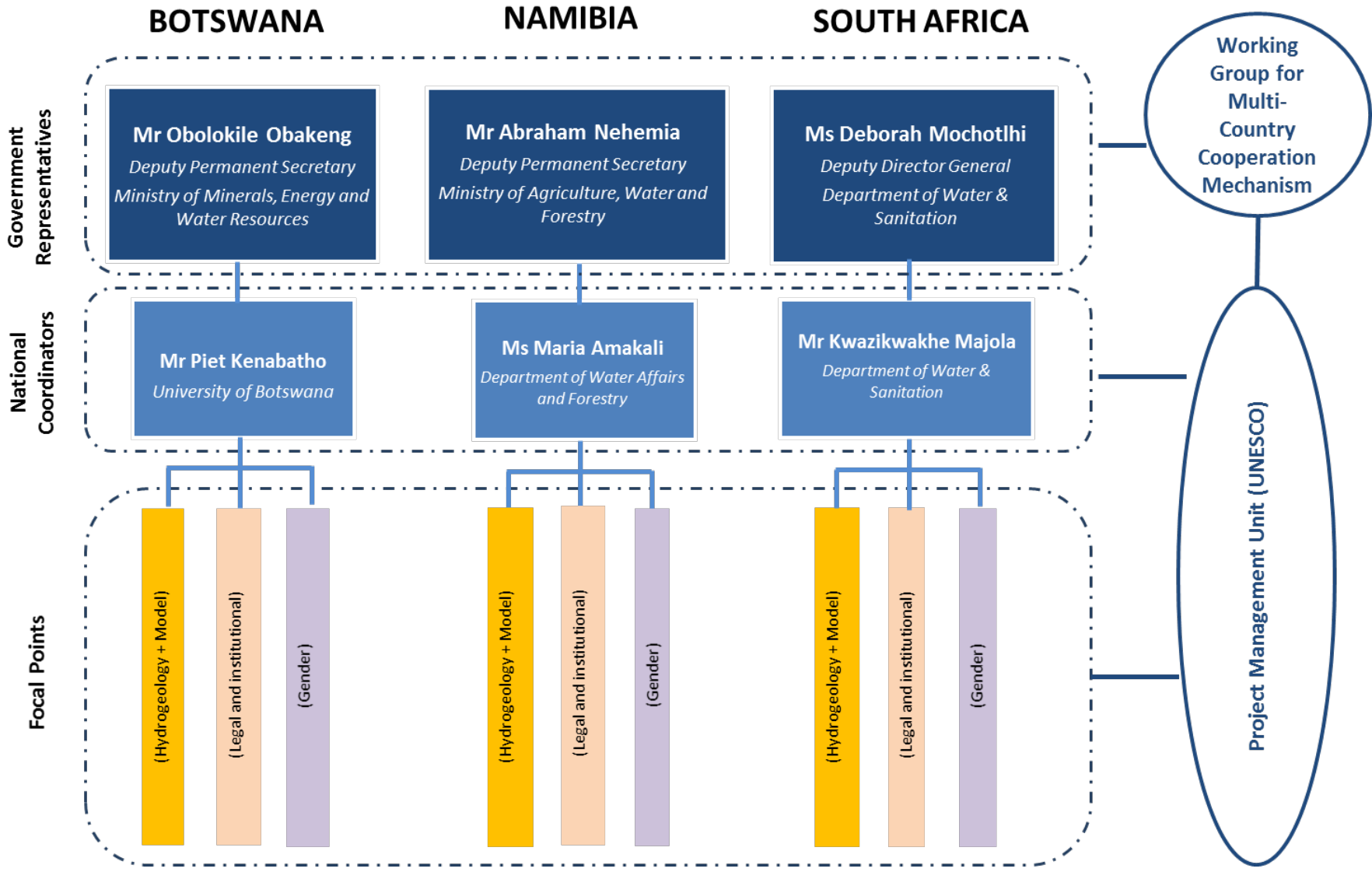
Annex 2 – List of participants

Name	Position	Institution
Mr Kwazikwakhe Majola	South African GGRETA Project National Coordinator	Department of Water and Sanitation (South Africa)
Mr Ramogale Sekwele	Scientific Manager	Department of Water and Sanitation (South Africa)
Ms Mpelegeng Lebeloane	South African GGRETA Project Legal and Institutional expert	Department of Water and Sanitation (South Africa)
Ms Joyce Leshomo	Hydrogeologist	Council for Geoscience
Mr Piet Kenabatho	Botswana GGRETA Project National Coordinator	University of Botswana (Botswana)
Mr Thato Setloboko	Head of Groundwater Division	Department of Water Affairs (Botswana)
Mr Peloteshweu Phofuetsile	Deputy Director	Department of Water Affairs (Botswana)
Ms Maria Amakali	Namibia GGRETA Project National Coordinator Director: Water Resource Management	Department of Water Affairs and Forestry (Namibia)
Mr Bertram Swartz	Deputy Director: Hydrogeology	Department of Water Affairs and Forestry (Namibia)
Ms Gettie Mulokoshi	Hydrogeologist	Department of Water Affairs and Forestry (Namibia)
Mr Christoph Lohe	Senior Hydrogeologist	BGR / Department of Water Affairs and Forestry (Namibia)
Mr Tales Carvalho Resende	GGRETA – STAS Coordinator	UNESCO International Hydrological Programme (IHP)

Annex 3 – List of GGRETA Phase 1 publications

1		<p>GGRETA Project: Overview and Results (English, Spanish, Russian)</p>
2, 3, 4		<ul style="list-style-type: none"> • Trifinio – Estudio de las aguas subterráneas – Informe Técnico (Final Assessment Report, in Spanish) • Stampriet – Transboundary Aquifer System Assessment • Pretashkent - Aquifer Assessment Report (in Russian)
5		<p>GGRETA project: Main achievements and Key Findings (Phase 1, 2013-2015)</p>
6		<p>The GGRETA Information Management System</p>
7		<p>Hydrodiplomacy, Legal and Institutional Aspects of Water Resources Governance - Training Manual – GGRETA project</p>
8		<p>Guidelines for Multidisciplinary Assessment of Transboundary Aquifers (draft)</p>

Annex 4 – GGRETA project Phase 2 structure



Annex 5 – Terms of Reference of the GGRETA Phase 2 Core Working Groups

1) Core Working Group for the establishment of the STAS Multi-Country Consultation Mechanism (MCCM)

Composition	<p>Ideally (not restricted):</p> <ul style="list-style-type: none"> - 1 High-Level Representative from each Country supported by its respective GGRETA project National Coordinator - 1 Official from the Ministry of Foreign Affairs - Support by UNESCO-IHP experts
Tasks	<ul style="list-style-type: none"> - Provide guidance and recommendations for the setting-up of Multi-Country Consultation Mechanism for the governance and management of the STAS

2) Core Working Group for modelling

Composition	<p>Ideally (not restricted):</p> <ul style="list-style-type: none"> - 1-2 Representatives of the Department of Water Affairs - 1-2 Representatives at University or Independent consultants
Tasks	<ul style="list-style-type: none"> - Undertake the “training for trainers” prepared by UNESCO-IHP for the utilization of the modelling platform (FREEWAT platform) - Assist in the preparation of the STAS model in close collaboration with UNESCO-IHP - Liaise with national decision-makers and provide guidance on simulation scenarios to be undertaken - Prepare and deliver national trainings for the utilization of the modelling platform in collaboration with UNESCO-IHP

3) Core Working Group for legal and institutional aspects

Composition	<p>Ideally (not restricted):</p> <ul style="list-style-type: none"> - 1 Representative of the Department of Water Affairs - 1 Representative at University or Independent consultants
Tasks	<ul style="list-style-type: none"> - Assist in the refinement of Country assessments of domestic legislation and institutions conducted under GGRETA Phase 1. - Assist in the preparation of tools and materials for national training courses on domestic water legislation in support of transboundary groundwater cooperation

4) Core Working Group for gender aspects

Composition	Ideally (not restricted): <ul style="list-style-type: none">- 1 Representative of the Department of Water Affairs- 1 Representative at University or Independent consultants
Tasks	<ul style="list-style-type: none">- Assist in the the preparation of tools and materials for the collection and assessment of sex-disaggregated data- Assist in the gender analysis of current water policies

Annex 6 – Detailed activities workplan (September 2016 – April 2017)

Governance of Groundwater Resources in Transboundary Aquifers (GGRETA) Project - PHASE 2 <i>TENTATIVE WORKPLAN - SEPTEMBER 2016 / APRIL 2017</i>								
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ACTIVITIES / ACTIONS	PHASE II							
	2016				2017			
	9	10	11	12	1	2	3	4
Outcome 1: Improved resource knowledge and monitoring based on recognition of the importance and vulnerability of transboundary groundwater resources.								
<i>Output 1.1: Improved knowledge of the resource</i>								
1 STAS model set up on MODFLOW including nomination of Core Working Groups (in partnership with FREEWAT project)								
2 STAS model application: preliminary results (in partnership with FREEWAT project)								
<i>Output 1.2: Joint database and monitoring protocols prepared</i>								
3 Update of the STAS joint borehole database (including time series data)								
4 Preparation of data for STAS model								

Outcome 2: Enhanced cross-border dialogue and cooperation

Output 2.1: The Stampriet Core Group for the sustainable management of the aquifer established

5	Technical meeting for workplan adoption (Johannesburg, South Africa)								
6	High-Level Meeting (Paris, France)								

Output 2.2: Regional Dialogue on Conjunctive Surface and Groundwater Management in Transboundary Contexts established

7	Regional Meeting on Tools for the Sustainable Management of Transboundary Aquifers (in partnership with IWMI)								
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Outcome 3: Improved capacity in groundwater governance, hydro-diplomacy and gender, and effective communication aiming at replication of project experiences and approaches

Output 3.1: Capacity building programme implemented and awareness raised

8	Regional trainings on Hydrogeology modelling								
9	Regional training on Water Law: From international to domestic perspective								
11	Refinement of country assessments of domestic legislation and institutions conducted under GGRETA Phase 1 by national experts								
12	Preparation of tools and materials for national training courses on domestic water legislation in support of transboundary groundwater cooperation								
13	National training courses on domestic water legislation & institutions in support of transboundary groundwater cooperation								
14	Regional training on tools for the collection of sex-disaggregated data								

15	Preparation of tools and materials for the collection and assessment of sex disaggregated data								
16	National training courses on engendering domestic water legislation & institutions								

Annex 7 – Draft Articles on the Law of Transboundary Aquifers (UNGA Resolution 63/124)

Conscious of the importance for humankind of life supporting groundwater resources in all regions of the world,

Bearing in mind Article 13, paragraph 1 (a), of the Charter of the United Nations, which provides that the General Assembly shall initiate studies and make recommendations for the purpose of encouraging the progressive development of international law and its codification,

Recalling General Assembly resolution 1803 (XVII) of 14 December 1962 on permanent sovereignty over natural resources, Reaffirming the principles and recommendations adopted by the United Nations Conference on Environment and Development of 1992 in the Rio Declaration on Environment and Development and Agenda 21,

Taking into account increasing demands for freshwater and the need to protect groundwater resources,

Mindful of the particular problems posed by the vulnerability of aquifers to pollution,

Convinced of the need to ensure the development, utilization, conservation, management and protection of groundwater resources in the context of the promotion of the optimal and sustainable development of water resources for present and future generations,

Affirming the importance of international cooperation and good neighbourliness in this field,

Emphasizing the need to take into account the special situation of developing countries, Recognizing the necessity to promote international cooperation,

PART ONE INTRODUCTION

Article 1 Scope

The present draft articles apply to:

- (a) utilization of transboundary aquifers or aquifer systems;
- (b) other activities that have or are likely to have an impact upon such aquifers or aquifer systems; and
- (c) measures for the protection, preservation and management of such aquifers or aquifer systems.

Article 2
Use of terms

For the purposes of the present draft articles:

- (a) “aquifer” means a permeable water-bearing geological formation underlain by a less permeable layer and the water contained in the saturated zone of the formation;
- (b) “aquifer system” means a series of two or more aquifers that are hydraulically connected;
- (c) “transboundary aquifer” or “transboundary aquifer system” means respectively, an aquifer or aquifer system, parts of which are situated in different States;
- (d) “aquifer State” means a State in whose territory any part of a transboundary aquifer or aquifer system is situated;
- (e) “utilization of transboundary aquifers or aquifer systems” includes extraction of water, heat and minerals, and storage and disposal of any substance;
- (f) “recharging aquifer” means an aquifer that receives a non-negligible amount of contemporary water recharge;
- (g) “recharge zone” means the zone which contributes water to an aquifer, consisting of the catchment area of rainfall water and the area where such water flows to an aquifer by runoff on the ground and infiltration through soil;
- (h) “discharge zone” means the zone where water originating from an aquifer flows to its outlets, such as a watercourse, a lake, an oasis, a wetland or an ocean.

PART TWO
GENERAL PRINCIPLES

Article 3
Sovereignty of aquifer States

Each aquifer State has sovereignty over the portion of a transboundary aquifer or aquifer system located within its territory. It shall exercise its sovereignty in accordance with international law and the present draft articles.

Article 4
Equitable and reasonable utilization

Aquifer States shall utilize transboundary aquifers or aquifer systems according to the principle of equitable and reasonable utilization, as follows:

(a) they shall utilize transboundary aquifers or aquifer systems in a manner that is consistent with the equitable and reasonable accrual of benefits therefrom to the aquifer States concerned;

(b) they shall aim at maximizing the long-term benefits derived from the use of water contained therein;

(c) they shall establish individually or jointly a comprehensive utilization plan, taking into account present and future needs of, and alternative water sources for, the aquifer States; and

(d) they shall not utilize a recharging transboundary aquifer or aquifer system at a level that would prevent continuance of its effective functioning.

Article 5

Factors relevant to equitable and reasonable utilization

1. Utilization of a transboundary aquifer or aquifer system in an equitable and reasonable manner within the meaning of draft article 4 requires taking into account all relevant factors, including:

(a) the population dependent on the aquifer or aquifer system in each aquifer State;

(b) the social, economic and other needs, present and future, of the aquifer States concerned;

(c) the natural characteristics of the aquifer or aquifer system;

(d) the contribution to the formation and recharge of the aquifer or aquifer system;

(e) the existing and potential utilization of the aquifer or aquifer system;

(f) the actual and potential effects of the utilization of the aquifer or aquifer system in one aquifer State on other aquifer States concerned;

(g) the availability of alternatives to a particular existing and planned utilization of the aquifer or aquifer system;

(h) the development, protection and conservation of the aquifer or aquifer system and the costs of measures to be taken to that effect;

(i) the role of the aquifer or aquifer system in the related ecosystem.

2. The weight to be given to each factor is to be determined by its importance with regard to a specific transboundary aquifer or aquifer system in comparison with that of other relevant factors. In determining what is equitable and reasonable utilization, all relevant factors are to be considered together and a conclusion reached on the basis of all the factors. However, in weighing different kinds of utilization of a transboundary aquifer or aquifer system, special regard shall be given to vital human needs.

Article 6
Obligation not to cause significant harm

1. Aquifer States shall, in utilizing transboundary aquifers or aquifer systems in their territories, take all appropriate measures to prevent the causing of significant harm to other aquifer States or other States in whose territory a discharge zone is located.

2. Aquifer States shall, in undertaking activities other than utilization of a transboundary aquifer or aquifer system that have, or are likely to have, an impact upon that transboundary aquifer or aquifer system, take all appropriate measures to prevent the causing of significant harm through that aquifer or aquifer system to other aquifer States or other States in whose territory a discharge zone is located.

3. Where significant harm nevertheless is caused to another aquifer State or a State in whose territory a discharge zone is located, the aquifer State whose activities cause such harm shall take, in consultation with the affected State, all appropriate response measures to eliminate or mitigate such harm, having due regard for the provisions of draft articles 4 and 5.

Article 7
General obligation to cooperate

1. Aquifer States shall cooperate on the basis of sovereign equality, territorial integrity, sustainable development, mutual benefit and good faith in order to attain equitable and reasonable utilization and appropriate protection of their transboundary aquifers or aquifer systems.

2. For the purpose of paragraph 1, aquifer States should establish joint mechanisms of cooperation.

Article 8
Regular exchange of data and information

1. Pursuant to draft article 7, aquifer States shall, on a regular basis, exchange readily available data and information on the condition of their transboundary aquifers or aquifer systems, in particular of a geological, hydrogeological, hydrological, meteorological and ecological nature and related to the hydrochemistry of the aquifers or aquifer systems, as well as related forecasts.

2. Where knowledge about the nature and extent of a transboundary aquifer or aquifer system is inadequate, aquifer States concerned shall employ their best efforts to collect and generate more complete data and information relating to such aquifer or aquifer system, taking into account current practices and standards. They shall take such action individually or jointly and, where appropriate, together with or through international organizations.

3. If an aquifer State is requested by another aquifer State to provide data and information relating to an aquifer or aquifer system that are not readily available, it shall employ its best efforts to comply with the request. The requested State may condition its compliance upon payment by the requesting State of the reasonable costs of collecting and, where appropriate, processing such data or information.

4. Aquifer States shall, where appropriate, employ their best efforts to collect and process data and information in a manner that facilitates their utilization by the other aquifer States to which such data and information are communicated.

Article 9
Bilateral and regional agreements and arrangements

For the purpose of managing a particular transboundary aquifer or aquifer system, aquifer States are encouraged to enter into bilateral or regional agreements or arrangements among themselves. Such agreements or arrangements may be entered into with respect to an entire aquifer or aquifer system or any part thereof or a particular project, programme or utilization except insofar as an agreement or arrangement adversely affects, to a significant extent, the utilization, by one or more other aquifer States of the water in that aquifer or aquifer system, without their express consent.

PART THREE
PROTECTION, PRESERVATION AND MANAGEMENT

Article 10
Protection and preservation of ecosystems

Aquifer States shall take all appropriate measures to protect and preserve ecosystems within, or dependent upon, their transboundary aquifers or aquifer systems, including measures to ensure that the quality and quantity of water retained in an aquifer or aquifer system, as well as that released through its discharge zones, are sufficient to protect and preserve such ecosystems.

Article 11
Recharge and discharge zones

1. Aquifer States shall identify the recharge and discharge zones of transboundary aquifers or aquifer systems that exist within their territory. They shall take appropriate measures to prevent and minimize detrimental impacts on the recharge and discharge processes.

2. All States in whose territory a recharge or discharge zone is located, in whole or in part, and which are not aquifer States with regard to that aquifer or aquifer system, shall cooperate with the aquifer States to protect the aquifer or aquifer system and related ecosystems.

Article 12
Prevention, reduction and control of pollution

Aquifer States shall, individually and, where appropriate, jointly, prevent, reduce and control pollution of their transboundary aquifers or aquifer systems, including through the recharge process, that may cause significant harm to other aquifer States. Aquifer States shall take a precautionary

approach in view of uncertainty about the nature and extent of a transboundary aquifer or aquifer system and of its vulnerability to pollution.

Article 13 Monitoring

1. Aquifer States shall monitor their transboundary aquifers or aquifer systems. They shall, wherever possible, carry out these monitoring activities jointly with other aquifer States concerned and, where appropriate, in collaboration with competent international organizations. Where monitoring activities cannot be carried out jointly, the aquifer States shall exchange the monitored data among themselves.

2. Aquifer States shall use agreed or harmonized standards and methodology for monitoring their transboundary aquifers or aquifer systems. They should identify key parameters that they will monitor based on an agreed conceptual model of the aquifers or aquifer systems. These parameters should include parameters on the condition of the aquifer or aquifer system as listed in draft article 8, paragraph 1, and also on the utilization of the aquifers or aquifer systems.

Article 14 Management

Aquifer States shall establish and implement plans for the proper management of their transboundary aquifers or aquifer systems. They shall, at the request of any of them, enter into consultations concerning the management of a transboundary aquifer or aquifer system. A joint management mechanism shall be established, wherever appropriate.

Article 15 Planned activities

1. When a State has reasonable grounds for believing that a particular planned activity in its territory may affect a transboundary aquifer or aquifer system and thereby may have a significant adverse effect upon another State, it shall, as far as practicable, assess the possible effects of such activity.

2. Before a State implements or permits the implementation of planned activities which may affect a transboundary aquifer or aquifer system and thereby may have a significant adverse effect upon another State, it shall provide that State with timely notification thereof. Such notification shall be accompanied by available technical data and information, including any environmental impact assessment, in order to enable the notified State to evaluate the possible effects of the planned activities.

3. If the notifying and the notified States disagree on the possible effect of the planned activities, they shall enter into consultations and, if necessary, negotiations with a view to arriving at an equitable resolution of the situation. They may utilize an independent fact-finding body to make an impartial assessment of the effect of the planned activities.

PART FOUR
MISCELLANEOUS PROVISIONS

Article 16
Technical cooperation with developing States

States shall, directly or through competent international organizations, promote scientific, educational, legal and other cooperation with developing States for the protection and management of transboundary aquifers or aquifer systems, including, inter alia:

- (a) strengthening their capacity-building in scientific, technical and legal fields;
- (b) facilitating their participation in relevant international programmes;
- (c) supplying them with necessary equipment and facilities;
- (d) enhancing their capacity to manufacture such equipment;
- (e) providing advice on and developing facilities for research, monitoring, educational and other programmes;
- (f) providing advice on and developing facilities for minimizing the detrimental effects of major activities affecting their transboundary aquifer or aquifer system;
- (g) providing advice in the preparation of environmental impact assessments;
- (h) supporting the exchange of technical knowledge and experience among developing States with a view to strengthening cooperation among them in managing the transboundary aquifer or aquifer system.

Article 17
Emergency situations

1. For the purpose of the present draft article, “emergency” means a situation, resulting suddenly from natural causes or from human conduct, that affects a transboundary aquifer or aquifer system and poses an imminent threat of causing serious harm to aquifer States or other States.

2. The State within whose territory the emergency originates shall:

- (a) without delay and by the most expeditious means available, notify other potentially affected States and competent international organizations of the emergency;
- (b) in cooperation with potentially affected States and, where appropriate, competent international organizations, immediately take all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate any harmful effect of the emergency.

3. Where an emergency poses a threat to vital human needs, aquifer States, notwithstanding draft articles 4 and 6, may take measures that are strictly necessary to meet such needs.

4. States shall provide scientific, technical, logistical and other cooperation to other States experiencing an emergency. Cooperation may include coordination of international emergency actions and communications, making available emergency response personnel, emergency response equipment and supplies, scientific and technical expertise and humanitarian assistance.

Article 18
Protection in time of armed conflict

Transboundary aquifers or aquifer systems and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.

Article 19
Data and information vital to national defence or security

Nothing in the present draft articles obliges a State to provide data or information vital to its national defence or security. Nevertheless, that State shall cooperate in good faith with other States with a view to providing as much information as possible under the circumstances.