Mission Report:
Groundwater Resources Governance in the Trifinio Transboundary Aquifer
UNESCO / UICN

Datum: 3/3/2013 - 8/3/2013

Destination: Ciudad de Guatemala and Trifinio area, Guatemala. San José, Costa Rica.

Subject: SDC/UNESCO project on Governance of Transboundary Aquifers. Mission to Trifinio (Central America Case Study)

Organised by: UNESCO and IUCN

1. INTRODUCTION

This mission was organised as part of the Preparation Phase of the SDC/UNESCO project "Groundwater Resources Governance in Transboundary Aquifers", executed from October 2012 to March 2013. The main output expected from this preparation phase is the elaboration of the detailed Project Document for the subsequent implementation of the Full Size Project.

The Preparation Phase considered the organization of missions to each of the selected case studies locations, one of them Trifinio, a transboundary aquifer shared by Guatemala, Honduras and El Salvador. In this mission Andrea Merla assisted as consultant for UNESCO-IHP in this project and Laura del Val Alonso represented UNESCO/IGRAC. The mission was organised by UICN Mesoamérica, being focal points for this project: Rocio Cordoba and Carlos Rosal. During the mission, the UNESCO team had meetings with the staff of the regional offices of UNESCO and UICN, with the consultants hired by UICN as part of the project preparation, and visited the project area with the assistance of Coordinator of the Plan Trifinio, and met with local stakeholders and municipalities.

The objectives of the mission were:

(i) Explain and discuss with the UICN team charged with the project execution under UNESCO's supervision, the methodology to be applied to the Trifinio case study; .

(ii) Get acquainted with the field conditions and hydrogeological aspects of the Upper Rio Lempa Valley (Trifinio).

(iii) Present the project to key stakeholders from the three aquifers, to the focal points of the IHP and ISARM and other authorities.

(iv) Gather information and provide guidance to UICN for the preparation of a detailed plan of the activities to be implemented during project execution.

2. ACTIVITIES

2.1.Visit to the Aquifer area (4th - 5th March)

Participants:

- Carlos Rosal (UICN Mesoamérica)
- Sebastián Samayoa and Patricia Alvarado (UICN/ consultants)
- Juan Carlos Montufar (Project coordinators Plan Trifinio)

Overview:

The first event in the agenda was a visit to the aquifer area around Esquipulas (Guatemala) and Ocotepeque (Honduras). During the visit we meet the Manager of the Plan Trifinio (Esquipulas) and representatives from the Mancomunidad Trinacional Fronteriza Río Lempa (Ocotepeque). All people met during the visit identified groundwater management as one of the upcoming and more challenging issues to solve in the area. Therefore, the project was received with enthusiasm.

Suggestions and comments:

- Development of an inventory of sources of groundwater contamination and wells.
- Creation of a groundwater users association to canalise efforts in the collection of groundwater data and implementation of actions.
- Design and implementation of a capacitation course to involve main local stakeholders and groundwater users.
- Utilization of the already existing GIS-based on-line information system developed for the Plan Trifinio to centralise information collected in the project. This platform is not longer available on-line, but the platform and information exist and could be made available once more.
- The Mancomunidad Trinacional Fronteriza Río Lempa has an information system were all the administrative and institutional information is available.
- The Plan Trifinio from a technical point of view, and the Mancomunidad, from a more administrative and policy point of view, should work together for the consecution of the project objectives. This will be decisive in the second phase of the project, when the project will focus on the governance of groundwater resources and policies development.

2.2. Workshop: Preliminary evaluation of the aquifer conditions (6th - 7th March)

Participants:

- Rocío Córdoba and Carlos Rosal (UICN Mesoamérica)
- Sebastián Charchalac, Manuel Escamilla, Melany Machado, Fernando Samayoa and Patricia Alvarado (UICN/ consultants)

Overview:

A meeting was organised with UICN representatives and consultants hired for the preliminary evaluation of the aquifer conditions, considering hydrogeological, socio-economic, environmental aspects of the aquifer area, and gender issues that might arise during project execution. The current state of the project was briefly introduced to the participants, followed by the presentation of the preliminary evaluation results. The presented results reflect an important amount of information about the aquifer area and the presence of multi-country institutions to involve during the project execution. The results of this preliminary evaluation will be developed in a report that will contribute to the project document of the Full Size Project Phase.

Suggestions and comments:

- In the final report of the Preliminary Evaluation of the Aquifer Conditions in the Trifinio, the consultants should link the information collected with all the indicators proposed in the TWAP methodology.
- It was proposed to request letters of commitment to the project from the three aquifer states.
- UNESCO and IGRAC should define more in detail the methodology and standard procedures to follow during the project execution, especially in terms of data collection and management.
- IUCN proposed the design of a capacitation module on groundwater governance to implement during project execution. IGRAC could assist on the design and implementation of the module.
- IUCN will elaborate the aquifer-specific activities for the Trifinio to be included in the project document.

2.3. Official meeting UNESCO/UICN with regional stake-holders (8th March)

Participants:

Representatives from the following institutions where present in the meeting: IHP-Focal points, ISARM-Americas, OEA, UNESCO, Plan Trifinio and representative national administrations.

Overview:

On Friday 8th of March a meeting with the main regional stakeholders and representatives of UNESCO and UICN was held in UNESCO-IHP headquarters in San José de Costa Rica.

The objectives of the meeting were:

- To inform about the objectives, structure and methodology of the project to key regional stakeholders. The linkages with the Transboundary Water Assessment Programme (TWAP) funded by the GEF were also described.

- To present the project developments achieved during the Project Preparation Phase.
- To discuss the project proposal for the Trifinio Aquifer.

Suggestions and comments:

- Trigger institutional and legislative actions:
    - Use the land-use planning national offices to achieve legislative actions.
    - Improve coordination between the technical staff of the Plan Trifinio and its political counterpart at the Mancomunidad Trinacional Fronteriza Río Lempa.
- Collection of new in-situ data:
    - Inventory of sources of pollution
    - Agree on harmonised methods for the in-situ data collection
    - Use regional MSc students to do survey
    - Use regional capacities (people and instruments) to implement a small survey. Main support needed in logistics.
- Improvement of regional capacities:
    - Training courses on groundwater governance for the local stakeholders and groundwater users.
    - Training of technical experts during project execution.
- Project sustainability:
    - Request support from other initiatives in the region that might complement the project.
    - Consider sustainability of monitoring programme, since countries often do not release budget for offsets.
    - Try to visualise the project in the long-term (20 years), and analyse sustainability of the project objectives upon finalization.
- Assessment:
    - Identification of recharge areas.
    - Check groundwater demand from population in aquifer area to establish priorities

CONCLUSIONS

- Overall the project was well received by all stakeholders at the local, national and transboundary levels. The framework for the multi-country integrated management of resources is already in place. Moreover, country representatives expressed the necessity for a more in depth and comprehensive approach to the management of groundwater in the existing plans.

- The **development of a common Information Management System** was identified by all actors as one of the key project activities that will foster

cooperation between countries. This system will have to consider/integrate similar initiatives already in place in the region.

- **Collection of data on the field** will be necessary. For this, local capacities and instruments will be used and improved. One of the main targets of the field survey will be the inventory of wells and of contamination sources. Furthermore, methods for data collection will be harmonised between countries.

- **Capacitation on groundwater governance issues** is identified as one of the challenges to facilitate engagement of regional and local stakeholder and groundwater users in the area. A specific activity could be proposed during drafting of the project document.

- **The methodology proposed for the TBA assessment should be shaped up further in detail.** This work will be done by UNESCO/IGRAC, and Regional Execution Teams will be able to give their regional-specific point of view during the project inception, mainly through the design of a small set of aquifer-specific indicators.

For UNESCO: Andrea Merla

For UNESCO / IGRAC: Laura del Val Alonso

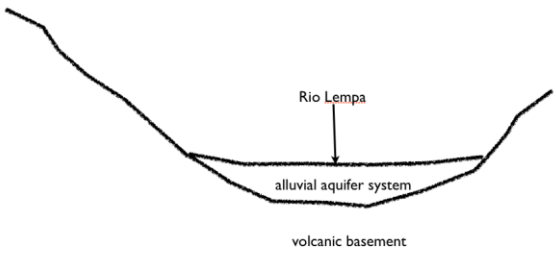
Annex I

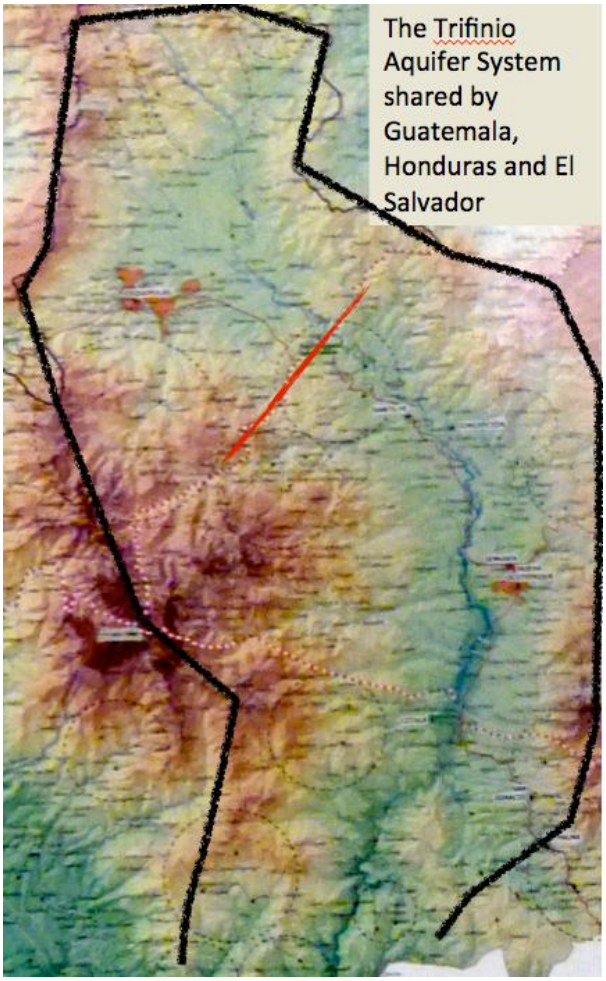
Preliminary considerations on the Esquipulas – Ocotepeque – Citalà Aquifer (Trifinio).

ANNEX I: Preliminary Considerations on the Esquipulas – Ocotepeque- Citala Aquifer System (Trifinio Aquifer).

The Trifinio Aquifer System is well representative of the many intermountain alluvial aquifers that overlie fractured hard rock basements, with complex permeability distribution linked to both fractures and primary porosity.

The Trifinio Aquifer is a complex hydrogeological system essentially consisting of an alluvial, mostly unconfined aquifer made of the recent –quaternary continental sediments of the Upper Rio Lempa valley, and occupying the valley floor with a maximum thickness of about 200m, overlying an ancient (Tertiary) volcanic basement of andesitic lavas and pyroclastic rocks showing strong signs of past hydrothermal alteration. The alteration process seems in many places to have almost completely obliterated the original hydrogeological characteristics of the rocks, creating on overall highly impermeable sequence. Only where tectonic processes are active, as for example along the fault line at the Guatemala – Honduras border not far from Esquipulas, the volcanic basement appears to be permeable with vertical fractures providing preferential pathways for water circulation, and for outcrops of thermal waters of deep origin. The basement outcrops extensively on the flanks of the valley floor, and appears impermeable with clear evidences of high runoff of rainwater, accelerated erosion of soil and little infiltration.
The recharge of the alluvial aquifer appears hence to be mostly due to the rainfall in the valley floor, and to inputs from small creeks draining into the Rio Lempa.





The shallow alluvial aquifer system contains good quality freshwater, but is highly vulnerable to contamination by anthropogenic activities on the surface, like agricultural practices and industrial and domestic discharges. Deep wells, reaching down to about 150m have crossed permeable water bearing layers more protected against pollution by surface agents. No well has reached down to the basement, and no information is available on the possible presence of fracture-controlled aquifers at the basement level.