



Markala Weir on the Niger River in Mali

INTEGRATED WATER RESOURCES MANAGEMENT

Over the last 55 years, we have been offering engineering and management services in our core fields of competence water, agriculture, environment, governance and waste. From our worldwide experience across these fields, we have learned that segmented sector planning and decision making generally leads to unsustainable development choices, an inefficient development of available resources and their poor allocation between uses and users.

AHT thus fully subscribes to the concept of Integrated Water Resources Management (IWRM) as defined by the Global Water Partnership. This sees IWRM as "a process which promotes the coordinated development and management of water, land and

related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems". More simply put, IWRM recognizes that water is a finite resource with a variety of uses, and that these uses are interdependent. Decision making for water resources should therefore not be made sectorally, and the mutual impact of the different demands must be considered in resource allocation.

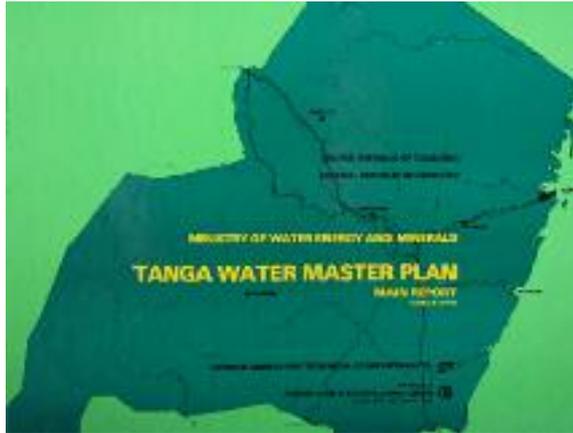
(continued on page 3)



Dr. Hubertus Schneider,
Managing Director

Dear reader,

Welcome to the latest edition of *All about AHT Group!* Our cover story deals with Integrated Water Resources Management (IWRM). Already in the early 1970s AHT was involved in large-scale water management projects such as the *Tanga Water Master Plan (1976)* in Tanzania or the *Water Master Plan Rio Cai (1971)* in Brazil. Increasing numbers of countries are today facing challenges related to water. Water shortages, the degradation of water quality and the impacts of floods and droughts all require increased attention and action. On the following pages we present our most recent activities in the field of integrated water resources management.



nication needs of our clients and expatriate staff, we are employing several staff of French origin for project management, project controlling and translation services. The majority of our permanent employees are also fluent in English, French and German.

Prospects for 2015

2015 has gotten off to a very promising start for our consulting business. We are expecting some significant contracts in our principal fields of expertise in countries where AHT has long-term experience, particularly Tunisia, Mali and Madagascar. In the past few months we have also increased our activities in Morocco and Niger, whilst Indonesia and Vietnam continue to be core regions for us for environmental projects (biodiversity, waste management). In view of the upcoming new projects we will be seeking to further increase our permanent staff of currently 59 employees.

The Business Year 2014

In 2014 the water sector was again the most successful domain of our five fields of work worldwide. In total, our international development business achieved a turnover of EUR 13.5 million and an operational profit of EUR 0.59 million. Both figures are in line with those of 2013.

Sub-Saharan Africa remains our main focal region and we maintain a high profile across the region. We are also pleased to have further expanded our presence in francophone Africa. Currently we are working in Benin, Burkina Faso, Chad, DR Congo, Cameroon, Ivory Coast, Madagascar, Mali, Mauritania, Morocco, Niger, Senegal, Togo and Tunisia. To meet the information and commu-

Profit and Loss Account 2014

EUR

Turnover	13,527,882
Operating result	593,486

Turnover 2014 by Regions

%

Sub-Saharan Africa	73.2
Central, East & Southeast Asia	5.2
Maghreb & Middle East	10.4
Southeast Europe	11.2

by Fields of Work

%

Water	31
Agriculture	26
Environment	23
Governance	14
Waste	6

New contracts recently acquired by AHT:

+++ **Benin:** Agricultural Adaptation to Climate Change (GIZ) +++ **Cameroon:** Forest and Environmental Sector Programme: Support for the Implementation of Activities financed by the Joint Fund – Extension (KfW) +++ **Tunisia:** Water Tariffication Study (KfW) +++ **Egypt:** Establishment of Leadership Development Plans for HCWW (EU) +++ **Rwanda:** Development of a Citizen Complaint Module (KfW) +++ **Vietnam:** Final Evaluation of Western Nghe An Rural Development Project (Lux-Development) +++ **Indonesia:** Feasibility Study for the Conservation of the Bukit Barisan Selatan National Park in Sumatra (KfW) +++ **Niger:** Decentralisation and Good Governance Programme – Extension (GIZ) +++ **Togo:** Decentralisation Support Programme (GIZ) +++ **Mali:** Strengthening of Irrigated Agriculture “REAGIR” (Canadian Cooperation through KfW) +++

Integrated Water Resources Management (contd.)



With lake levels perilously low, communities and riparian states in the Lake Chad basin are having to adopt integrated water resources management approaches

Since 1992, when the Dublin Principles put IWRM on the international agenda, there has been a clear shift in the water management paradigm. This has been away from sector specific plans, which sought to satisfy the needs of one sector in a specific location, and towards a transdisciplinary and participatory approach to resource management, considering the available resources at catchment level, and the often-conflicting needs and competing uses. This paradigm shift is being further driven by the severe impacts of global climate change and rocketing demographics, leading to resource overuse, water scarcity, and severe environmental degradation, undermining the resource base of many societies. Through the rise of IWRM, planners now recognize river basins as the natural unit for

water management, and that all uses are interconnected. Typical uses include the irrigation sector, domestic water users, industry, tourism and the environment, all of which require water in sufficient quantity and quality to address their needs. Adopting a participatory approach is thus considered essential in developing water management plans, as it is agreed that only through a consensus, based on a common understanding of the problem and vision for the future, can different actors be expected to adhere to the agreements made. This participatory approach requires the expertise of a transdisciplinary team who can facilitate a broad understanding among the different actors of the range of issues the water catchment might be facing.

AHT has amassed considerable experience in IWRM, building strong, highly qualified and regionally experienced teams that can apply knowledge from various disciplines as well as the insights from diverse stakeholders, to facilitate the development and implementation of efficient, equitable and sustainable solutions to water and development problems. AHT is currently providing support to IWRM processes through projects in several countries, some of which are presented in the following pages. In general, this support concentrates on three main areas to facilitate an intersectoral, participatory approach to water management. These are:

1. Supporting the development of an enabling environment for IWRM: This 'enabling environment' is the set of inter-related conditions that impact on the potential to introduce IWRM plans. It includes the political, legal, institutional, financial and economic, educational, technical and social conditions relevant to IWRM. For example,

in Central Asia, we have supported the governments in three water stressed nations to develop integrated water sector strategies for investment planning. A proper enabling environment is essential to both ensure the rights and assets of all stakeholders (individuals as well as public and private sector organizations and companies), and also to protect public assets such as intrinsic environmental values.

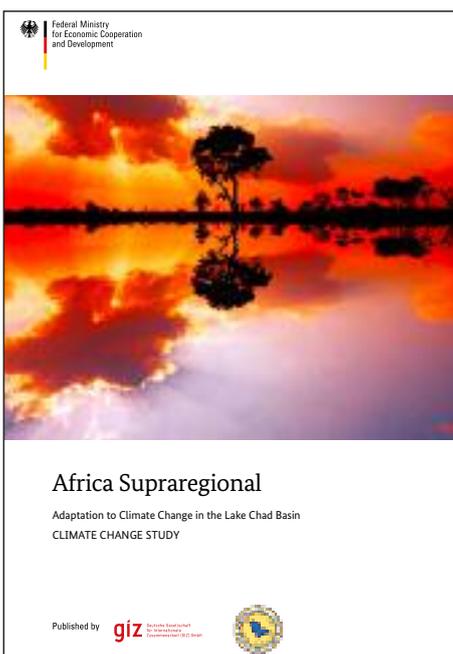
2. Clarifying the roles of institutions and facilitating institutional development: Given the multitude of actors involved in and affected by water management decisions, it is essential that all actors are aware of who is responsible for what in an agreed water management plan and that those responsible are in a position to perform their assigned task. Failure to match responsibilities, authority and capacities for action have all been major sources of difficulty when implementing IWRM plans. AHT addressed this problem, for example, in Indonesia by providing support to the Citarum River Basin Road Map Coordination and Management Unit.

3. Developing appropriate management instruments and training for their use: These tools and methods support decision-makers in making rational, informed choices between alternative actions. The development of these tools often involves long, iterative processes, requiring the input of a large number of actors in the water sector and the management of vast amounts of information. In transforming this information into a manageable form, for example through visualization as part of a GIS, local and national authorities, and other actors, gain access to powerful decision making supports. In our ongoing work in Zambia, we are supporting water users and institutions to access relevant information with the development of an Integrated Water Resources Management Information System.

Continuously learning from our experience, we are constantly improving the range of advisory services we can offer to support IWRM processes. We believe that this paradigm in water resources will only gain in importance in the coming decades and we are committed to providing our clients with cutting-edge expertise, supporting the sustainable management of water, land and related resources.



*Patrick Bracken,
IWRM Expert*



This Climate Change Study was carried out by AHT on behalf of GIZ in the framework of the programme "Sustainable Water Management in the Lake Chad Basin"

Tunisia: Evaluation Study on Irrigation Water Tariff Policy

For the most part, Tunisia is an arid country, and with the volume of water available per person estimated at 420 m³/year it is severely water scarce. The agricultural sector accounts for 80 % of water withdrawals in the country. Given the increasing pressure on water resources from other sectors of the national economy it is necessary to ensure the efficient use of irrigation water.

Efficient irrigation is conditioned by the existence and sustainable operation of irrigation infrastructure, funding of which has become a major concern for the Tunisian Government. To assess the current state of irrigation water pricing, and to find lasting, equitable and socially acceptable solutions for this, AHT with its partner SCET-Tunisia is implementing the "Evaluation study on tariff policy



During their study tour in Italy, representatives from the CRDA Manouba tested the automated water delivery system, which is used for delivering and metering irrigation water in the Foggia Area



Electronic drawing card

and the review and implementation of new water pricing methods", launched by the Ministry of Agriculture, Water Resources and Fisheries, and funded through KfW.

The study, which started in January 2015, covers 12 governorates and will analyse pricing in large, medium and small schemes in order to offer new pricing structures and methods. A major objective of the study is the development of a strategy for outreach and communication about irrigation water pricing.

Armenia: Integrated Water Resources Management Akhouryan River – Feasibility Study



Dr. Roland Barning,
Agro-economist

Construction of the Kaps Dam was started, but not completed, in the 1980s. As a result, the current agricultural production, mainly rain-fed agriculture and livestock breeding, has remained far below its potential.

AHT, as consortium partner with the Yerevan State University and under the leadership of CES, carried out a feasibility study on the resumption of the construction works for Kaps Dam to facilitate an efficient change from the current pumped irrigation scheme to a gravity-based irrigation system, financed by the German Government through KfW. A multidisciplinary team of about 30 international and national experts conducted the two interlinked studies including a conveyance system to exist-

ing and future irrigation areas and the introduction of water-saving technologies in irrigation. AHT's activities covered the assessment/simulation of crop water demand, water availability, reservoir levels and outflows for different scenarios, environmental impact, agricultural production and farm household systems, financial and economic

analysis of the project components, gender aspects, preliminary design of irrigation systems, assessment of training needs of WUAs and farmers. Furthermore, AHT supported the preparation of a management plan for the Akhouryan River Basin. The study enabled the Armenian Government to begin implementation.



Outlet channel of right bank main irrigation canal and erosion problems due to uncompleted construction

Pakistan: IRSA Capacity Building



The Upper Indus River Basin, with its outlet defined by the Tarbela dam

AHT, in consortium with NESPAK, has been contracted by the Indus River Basin Authority (IRSA) of Pakistan to develop reliable and transparent river discharge monitoring and flow forecasting systems for the Upper Indus Basin. These systems are pre-requisites to ensure the fair and equitable allocation of surface water resources to the four provinces in Pakistan, which is the prime responsibility of IRSA.



Dr. Jürgen Rambow,
Head of Water Resources
Management and Irrigation

Besides direct runoff, snowmelt and glacial melt are important components of the discharges from the Upper Indus Basin which are stored in the Tarbela Reservoir. That dam, along with Mangla Dam, plays a vital role in providing water to the irrigated areas along the Indus River. AHT's hydrologic and remote sensing experts supported IRSA by developing an improved river flow forecasting system to optimize the seasonal planning for irrigated agriculture and other sectors.



Project accountant Valerian Yambayamba (left) and AHT's disposition fund expert Florian Seeger

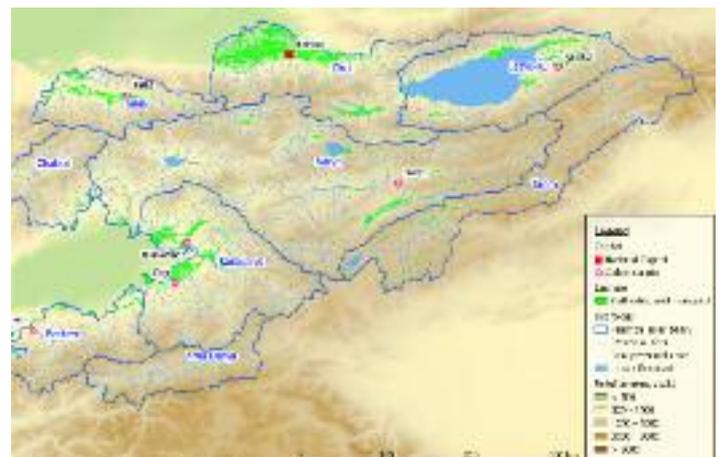
Zambia: Establishment of an Integrated Water Resources Management Information System

As partner of a consortium led by CES, AHT is involved in establishing an Integrated Water Resources Management Information System (IWRMIS) that will allow Zambian water users and institutions to extract the information required to adapt water resources management to climate change. To this end, a hydro-meteorological monitoring network will be set up and historical data will be digitized and transferred into the new IWRMIS.

With the enforcement of the Water Resources Management Act, the newly established Water Resources Management Authority (WRMA) is now responsible for water resource management and operation of the IWRMIS. The consortium assists the WRMA to establish procurement plans and implement tender procedures for the required hydro-meteorological equipment and IT hardware and software. These items are procured through a disposition fund managed by AHT.

Central Asia: Developing Water Resources Sector Strategies

AHT was contracted by the Asian Development Bank (ADB) to develop water resources sector strategies for Kyrgyzstan, Tajikistan and Uzbekistan. These countries have long been facing water resources sector challenges and see the further improvement of the water sector as indispensable to their national development strategies. The ADB thus provided regional technical assistance to the three governments for: a) a comprehensive analysis of water resources, water resources sector management, irrigation systems management and irrigated agriculture; and b) the definition of a water resources sector strategy and identification of high-priority investment projects. This process helped the governments to formulate their water resources sector challenges in an objective and transparent manner and to identify key activities and investment measures to overcome these. This has enabled the countries to reach agreements with their development partners on the most important needs for investment and reform and to mobilize resources to address these needs.



River Basins in the Kyrgyz Republic

Morocco: Development of an IWRM Convention for the Haouz-Mejjate Basin

The Haouz-Mejjate aquifer is situated at the foot of the Atlas Mountains below a plain of more than 6,000 km². The plain, of great importance for agricultural production, is traversed by ten wadis in a rapidly developing region around the urban and touristic centre of Marrakesh. The current management of water resources is critical for all water users, particularly those drawing on the aquifer, which is falling by around 2.5 m per year.

Within the GIZ's AGIRE Programme, AHT / RESING are developing a convention for integrated water resources management in the Haouz-Mejjate Basin for the Tensift Basin Hydraulic Agency (ABH-T). The project supports sustainable management by empowering water managers and users. To date, two important committees have been created: The Steering Committee, presided over by the "Wali" (Governor), arbitrates and monitors the general orientation of the convention. The Monitoring Committee, presided over by a representative of the Wali, ensures the realiza-



(from left to right:) Brahim Berjamy, Coordinator of the International Cooperation at the ABH-T, Marc Haering, GIZ Technical Advisor AGIRE Programme, Mohamed Aboufirass, Managing Director of RESING, Dr. Anja Stache, AHT's Team Leader

tion of the convention's action plan. The ABH-T assures the secretariat for both committees. Consulting services include a diagnostic of the present situation and the identification of

preliminary improvement measures. The IWRM convention will then be elaborated with all actors and a regional plan of action will be developed.

Benin: Standardisation of Water Quality Control

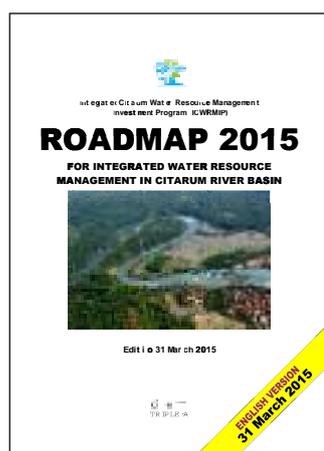
In the framework of the GIZ's Water and Sanitation Programme, AHT was contracted to strengthen the capacity of laboratory staff at the *Direction Nationale de la Santé Publique* and develop a monitoring system for water quality from the point of collection to consumption in the households. AHT prepared a baseline document compiling all the information necessary to conduct a survey on drinking water quality in peri-urban areas, describing steps, methodologies, tools, training materials, etc.

Laboratory staff were trained to conduct such surveys in pilot areas. AHT also developed and tested water quality self-tests in the households and an education kit to be used by so called "change agents" - engaged local people who can help trigger behavioral change to improve water quality in the households. The education kit also includes education material for household water treatment. Here, ceramic pot filters were found appropriate for application in rural and peri-urban settings.



Water sampling and baseline survey in the community of Sakété

Indonesia: The Citarum River Basin Road Map



The Government of Indonesia (GoI) requested financial support from the ADB to prepare an integrated water resources management project for the Citarum River Basin. A PPTA was conducted in the period 2006-2009 and produced, among others, an initial *Roadmap for the Integrated Water Resources Management in the Citarum River Basin*, which contained 80 activities with a total investment of 3.5 billion USD. To start implementation of this Roadmap, the GoI launched the *Integrated Citarum Water Resources Management Investment Programme (ICWRMIP)*, which was supported by a loan of about 500 million USD from the ADB. Management of the Roadmap was conducted by the Roadmap Coordination and Management Unit

(RCMU) staffed by AHT and its local partner PT Inakko. Users included not only the relevant national, provincial and local government agencies, but also the private sector and community. As a public document, the Roadmap serves as a tool to assist international funders and as a reference for national, provincial and local government budgeting. Management of the Roadmap was handed over to the Citarum River Basin Water Resources Management Coordinating Team in a workshop on 15 August 2014. The Roadmap has undergone a last update in 2015 to reflect the directions and policies related to water resources management of the new Indonesian Government.

The Russian Companies of the AHT Group

The Financial Year 2014

The rouble started the year 2014 at RUB 45 for 1 Euro and ended at RUB 70 for 1 Euro. By the end of April 2015 it had stabilized at around RUB 55. The devaluation and fluctuation had different impacts on the activities of MPS and the AHT Group in Russia. Cash assets of MPS lost 36 % of their value by the end of 2014. By the end of April 2015, the losses were reduced to "only" 18 %.

The accumulated turnover of MPS and its associated companies was RUB 326 million, an increase of 36 % on 2013, and profit before taxes was RUB 29.6 million. MPS's share of the profit was RUB 6.8 million, 60 % less than expected. Losses due to the early frost reduced the profits of Orlovka AIC from an expected RUB 12 million to RUB 2 million.

Samara-Solana performed very well under the new management of Mr. Torsten Mahr. Operational profits soared to RUB 50 million. Profit before taxes amounted to RUB 25 million due to the re-evaluation of the Euro debts. The Hotel Graf Orlov suffered from



The Hotel Graf Orlov in Samara

the opening of new hotels in the centre of Samara. The occupancy rate was reduced by 20 %, a black zero was the result. Eurotechnika MPS could sell all its stock because of

the rouble crash at the end of the year. Clients changed roubles for its high-value Trimble products.

Prospects for 2015

Agricultural commodity prices will probably adapt to world market level, and an increase of 20 % in rouble can be expected by the end of the year. Agricultural inputs, however, had to be bought at the beginning of the year. During this period the rouble was still around RUB 70 to the Euro, thus many inputs increased by 40-50 % in price!

An accumulated turnover of MPS and its associated companies of RUB 400 million (+23 %) with a profit of RUB 30 million seems feasible. The MPS share of the profit will probably amount to RUB 10 million.

Orlovka AIC

Orlovka AIC will cultivate this year 2,900 ha (+18 %) of which 1,350 ha will be soybeans, 650 ha maize, 475 ha barley, 275 ha durum and 150 ha potatoes. Under the new production manager Mr. Bernd Albers, who is a specialist in seed potato production, we expect improved results in both quantity and quality. A new 12 m Kverneland seeder and a 375 hp tractor will improve the seeding capacity. Early seeding is essential to avoid drought problems in the springtime. The planning is made for the production of 3,900 t of grain crops (+75 %), 1,500 t of soybeans (+25 %) and 6,000 t of potatoes (+50 %).

Production of Primary Precision Seeders

The MPS Group plans to start the production of 9 and 12 m Primary precision seeders for the Russian and Kazakh markets. The first 9 m pilot machine will be built in 2015/2016. The frame manufacturing will be outsourced whilst the construction of the tines as well as the assembly of the machines will take place at Orlovka AIC.

Weed Seeker

In cooperation with Eurotechnika MPS and Trimble a "weed-seeker" system was installed on a 24 m Kverneland sprayer. With this weed-seeker system, only the second in Russia, all weeds with a diameter bigger than 2.5 cm are spotted by a sensor that signals a spray nozzle to deliver a 100% dose of herbicide. A 30 % dose is applied to smaller weeds. This practice allows for a more effective treatment of persistent perennial weeds at reduced costs.



*Bernd Albers,
Production Manager at Orlovka AIC*



Two Primary precision seeder tines (blue) mounted on a 12 m Kverneland air seeder



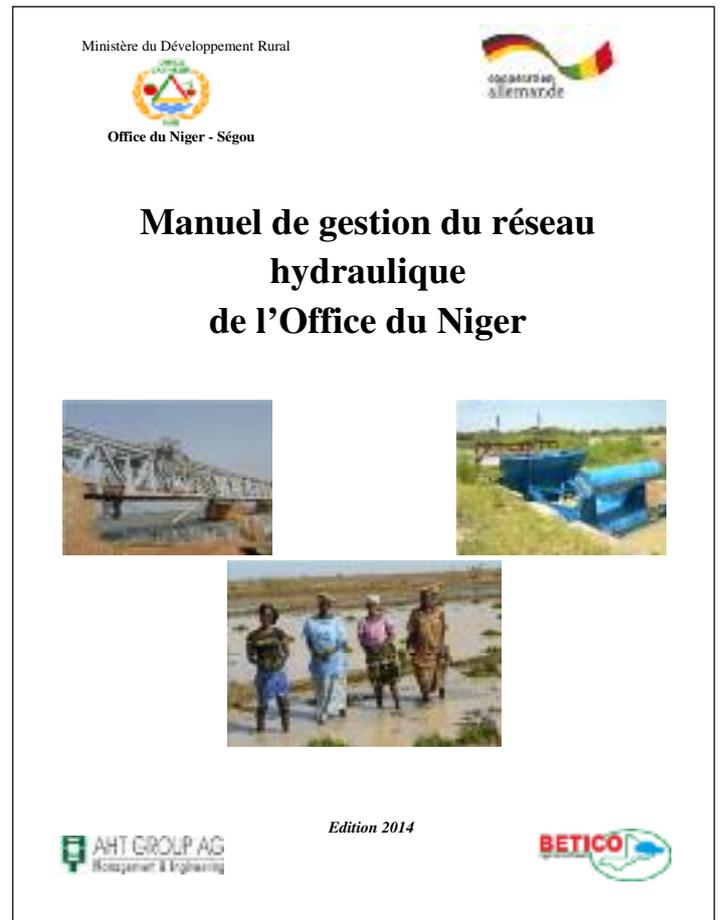
Weed-seeker system mounted on a sprayer

Mali: Preparation of an Irrigation Water Management Manual

Since the 1980s the Office du Niger (ON), supported by donor agencies, consulting firms, research institutions, constructions firms, private land users, and other actors, has been carrying out a modernisation programme of the irrigation infrastructure in its intervention zone. Currently more than 50,000 ha of irrigated land have been rehabilitated mainly for family farming, while the total surface to be managed by the Office du Niger covers 100,000 ha.

AHT and its Malian partner BETICO have elaborated an irrigation water management manual, which encompasses the design and operation and maintenance of the irrigation infrastructure managed by the ON. Funded by KfW as part of the accompanying measure to the irrigation infrastructure component, this handbook is the result of a long cooperation process between the consortium's irrigation water management experts and the technical staff of the Office du Niger.

The manual represents a guideline for appropriate irrigation water management including water-saving techniques. It addresses the technical staff of the ON charged with managing the irrigation equipment and its distribution among the water users, and farmers responsible for the tertiary irrigation system.



IMPRESSUM

AHT GROUP AG
Management & Engineering
Huyssenallee 66-68
45128 Essen
Germany
Phone: +49 201 2016-0
Fax: +49 201 2016-211
E-Mail: info@aht-group.com
Internet: www.aht-group.com

Edited by:
Uschi Quick
quick@aht-group.de

Managing Director:
Dr. Hubertus Schneider

Supervisory Board:
Gerardus van Wissen (Chairman)