

**Research project: Africa to Asia and Back Again: Testing
Adaptation in Flood-Based Resource Management**

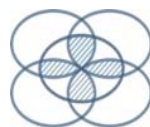
The second national workshop:

Toker Delta: Revitalizing the bright history for a brighter future

July 14 to 15, 2018, Port Sudan-Toker, Red Sea State



Prepared by: *HRC-Sudan Team*



Spate Irrigation
Network Foundation



Enabling poor rural people
to overcome poverty

Brief Report on the Workshop Activities

I. Introduction

The 2nd national workshop of the Flood-based Farming Systems (FBFSs) project in Sudan was held in Port Sudan and Toker, Red Sea State on 14-15 July 2018. It showed a very positive impact on strengthening the network of the FBFSs in Sudan as will be discussed in the workshop outcomes. More than 70 participants attended the workshop, including farmers and professionals on FBFSs from the four major flood based systems in Sudan, namely: Gash Agricultural Scheme, Toker Delta Agricultural Scheme, Khor Abu Habil Agricultural Scheme and Hud El Silem Agricultural Scheme. As well, academic staff from Red Sea University and researchers have participated in the workshop. The workshop opening was attended by two governors of provinces, Mr. Mekki Abdalla Ohaj - Toker locality governor and Mr. Bakash Abu Tahir. The workshop was also attended by Mr. Macpherson Nathara, the project leader of FBFSs in Malawi.

The workshop was hosted by Toker Delta Agricultural Scheme, who generously provided avenue and major logistical support during workshop days.

This workshop comes in the framework of the "Africa to Asia and Back Again: Testing Adaptation in Flood-Based Resource Management Project" networking activities which is being implemented by the Hydraulics Research Center (HRC-Sudan) in Sudan, with MetaMeta Research – The Netherlands (the leading partner), over the period 2015-2019, and with financial support from IFAD.

Toker Delta Agricultural Scheme (406,000 feddans) is located in the southern part of the coastal Red Sea plain about 160 km south of Port Sudan. It is fed by Khor Baraka, which starts from the Eritrean highlands. Historically, it was established in 1867 for production of cotton to feed the British Colony with raw cotton. Toker Delta is one of the few world highly fertile lands, with renewable soil washed annually by floods of Khor Baraka, and is a one season cultivation land. Main cultivated crops in the delta include Cotton, Sorghum, Millet, Beans and Vegetables.

II. Workshop goals

The overall goal of the workshop was to contribute to build-up of the knowledge-base in Sudan on potentiality and productive use of Flood-based farming systems.

The specific objectives were as follows:

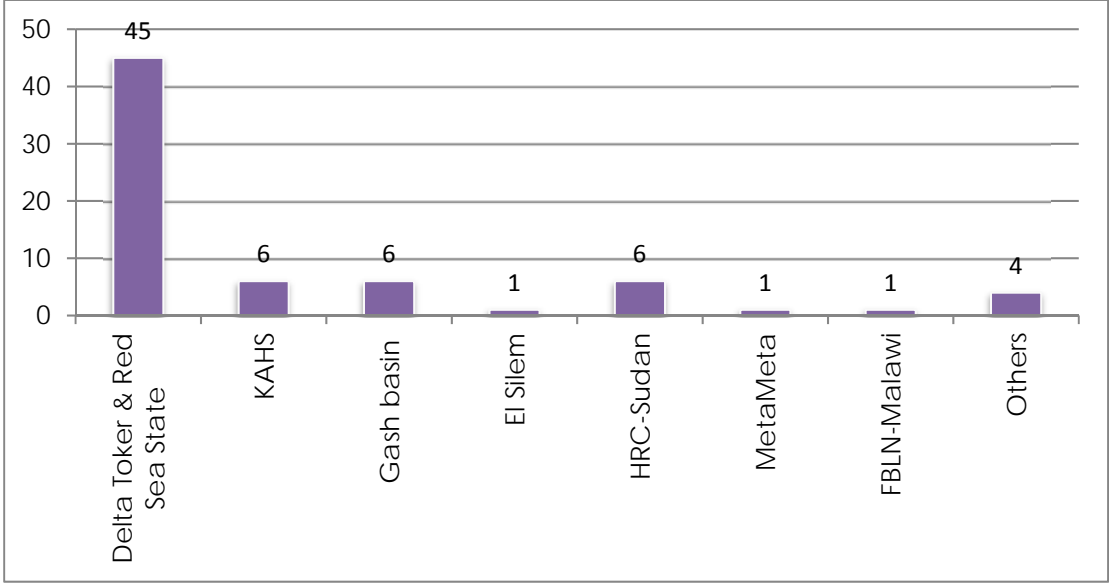
- To shed light on the potential of flood-based livelihood systems in Sudan for better and improved rural livelihoods.
- To identify and build upon good practices and address the challenges those hinder the productivity and production at Toker Delta Agricultural Scheme.
- To offer a platform for knowledge and experience sharing among the key actors from the Sudan and the region (farmers, professional, practitioners, development organizations and policy makers) already actively involved in or interested to engage in the development of FBFs.
- To strengthen the Sudan FBFs network with new ideas and new members.

On the other side, such events act as good opportunities to introduce HRC-Sudan and its key partners as the premium centres of research, training and capacity building in FBFs.

III. Workshop participants

Around 70 participants have attended the workshop. The list of participants is given in Annex 1. These include farmers and technicians from the four major spate systems in Sudan, namely: Gash Agricultural Scheme, Toker Delta Agricultural Scheme, Khor Abu Habil Agricultural Scheme, and Hud El Silem Agricultural Scheme. Unfortunately, three farmers from GAS were unable to join the participants to Toker in the last minutes because of unexpected weather conditions. Also, two farmers from Hud El Silem did not join the gathering as it was not possible for them being busy with the preparations for the growing season in Hud El Silem. The Coordinator of Malawi Country FBFs Chapter has actively participated in this workshop.

The figure below shows the organisations that actively contributed to the workshop.



It is worth to mention that farmers accounted for more than one-third of the total participants. It was highly appreciated that the participants from Khor Abu Habil Agricultural Scheme (Western Sudan) including professionals and farmers had to travel long distances (more than 1200 km) to attend this workshop in the North Eastern part of the country. Also, colleagues from HRC-Sudan and from Hud El Silem close to Egyptian border in Northern Sudan have travelled for over fourteen hours to reach the workshop avenue and to make this event a success. These efforts are very much appreciated by the project, and it reflects high interest of the participants of FBFS network.

IV. The Workshop program

The two-day workshop started with an opening session addressed by Mr. Mekki Abdalla Ohaj, Toker locality governor – Red Sea State, Dr. Ahmed Adam Ibrahim, Deputy General Director of HRC-Sudan, Dr. Abraham Mehari Haile, Principal Researcher at MetaMeta Research and Associate Professor at HRC-Sudan, and Eng. Hassan Isa, Director of Toker Delta Agricultural Scheme.

Representatives of governmental officials from Red Sea State and national administration were present in the opening session.



Photo 1: Opening session: from left to right, Eng. Hassan Isa, Mr. Bakash Abu Tahir, Mr. Mekki Abdalla, Dr. Ahmed Adam and Eng. Omer Ali

The first day has focused on presentations and discussions as raised by participants and the main theme was '*knowledge and experiences sharing of FBFS*'. The day has started with highlights on the Africa to Asia project in Sudan; its rationale and achievements over the years 2015-2017. This was followed by presentations on untapped opportunities for improved rural livelihood in FBLS areas, sharing experiences from Malawi Country Chapter, contribution of spate systems to food security in Sudan and outputs of the ongoing research in GAS. In the last session, presentations on the performance and future vision of the four spate systems were presented by schemes' directors. On the other hand, farmers' contribution was remarkable. Annex 2 gives the detailed program.



Photo 2: Presentation by Eng. Ahmed A. Bagi



Photo 3: Interactions from Mr. Isam E. Sorkty, Director General of State Ministry of Agriculture (left) and Farmer from the scheme (right)



Photo 4: Side view of some of the workshop participants

On the second day, the main theme was '*formulating relevant solutions-oriented research programme for Delta Toker Agricultural Scheme*'. In the morning session, field visit was planned to the scheme headquarter at Toker and irrigation system infrastructure of the scheme on Khor Baraka. However due to weather conditions it was limited to only visiting the entrance point of Khor Baraka to Toker Delta (Jebel Shadin). The afternoon session started with insights into the hydrology and water resources of Khor Baraka. This was followed by four group discussions aimed at prioritizing the main research topics for the scheme as summarized in the outputs section.



Photo 5: Khor Baraka at the entrance point to Toker Delta (15 July 2018)



Photo 6: Mr. Magzoub (farmer from Toker Delta) delivers the recommendations as prepared by group two

V. Main outcomes

The workshop participants collectively identified a set of main challenges that hinder production and productivity in Toker Delta Agricultural Scheme and proposed relevant solutions. In the table below, this information has been classified into five categories.

Classification	No.	Challenges	Proposed solutions
Research issues	1	Unstable flow regime of Khor Baraka: <ul style="list-style-type: none"> - flow variability - morphological change in river routes 	<ul style="list-style-type: none"> - Study of Khor Baraka from source to mouth - Study of proposed small dams - Study appropriate river training methods for Khor Baraka - Preparations of contour maps for the Delta - Study of existing small streams to increase yield
	2	Sedimentation problems	Investigation of applicable methods to reduce sedimentation in the Delta
	3	Mesquite infestation	<ul style="list-style-type: none"> - Research for Mesquite removal - Contracting companies for removal process
	4	flow deflection embankments	Improved design and construction
	5	Ground water use	<ul style="list-style-type: none"> - Assessment of ground water aquifer
Institutional set up issues	1	<ul style="list-style-type: none"> - No organizational structure of the scheme - Non existence of irrigation unit in the scheme 	<ul style="list-style-type: none"> - To initiate an organizational structure - Establishment of irrigation unit for better water management within the Delta (with resident irrigation engineer, all necessary machinery, ...) - Support of research unit

Information and human resources	1	<ul style="list-style-type: none"> - no river flow gauging - rainfall stations 	<ul style="list-style-type: none"> - Establishment of river flow gauging station - Access to early warning of rainfall
	2	<ul style="list-style-type: none"> - Lack in trained technical cadre and limited capacity building opportunities for them - Appropriate technology in agriculture is missed 	<ul style="list-style-type: none"> - Capacity building of working cadre in irrigation management (professional & farmers) - Training on water harvesting - Adaptation of new/simple technology
Governance /political issues	1	Ongoing development in the upstream catchment (Eretria)	Resolve transboundary water resources issues (Sudan-Eretria)
	2	Scheme identity	To be under the umbrella of central government (group 3)
	3	Delay in receiving allocated budget	Providing sufficient funding in a timely manner
	4	Accommodation within the Delta in the summer period	Activating laws and regulations
O/M issues	1	Damage in Sea Wall (it protects the delta from sea water)	Maintenance of the Sea Wall
Others	1	Marketing constraints	<ul style="list-style-type: none"> - Infrastructure/transportation - Enhancement of local manufacturing of production - Activating the role of productive associations

Others:

1. To enhance diversification in the Delta by introducing horticultural projects.
2. To eliminate seasonal unemployment.
3. To raise human capacities regarding health care.

As a conclusion, some of the identified problems need detailed studies and research investigation. However the matter of availability of qualified cadre especially for irrigation operations, this can be communicated with responsible authorities.

It is worth to mention that farmers from Khor Abu Habil have ensured the importance of farmers associations and they also treasured the partnership with private sector to resolve problems of financing.

VI. General remarks

- The workshop has achieved its goals and there was marked interest and unlimited cooperation from the administration body of Toker Delta Agricultural Scheme
- Workshop participants were invited by the Minister of Agriculture – Red Sea State to lunch on the second day
- Good media coverage was done to the workshop activities by HRC communication person and media section (website, social media, ...). In addition, few representatives of national and local media have documented the event. Articles on the workshop activities as reported in El Sudani and Elgezira newspapers are given in Annex 3. Also, some products will soon be added to the project web page under www.hrc-sudan.sd

Annex 1: List of participants

- ولاية البحر الأحمر ومشروع دلتا طوكر الزراعي

الرقم	الاسم	الجهة/المهنة	التلفون/الإيميل
1	السيد/ عصام الدين سركتي	مدير عام وزارة الزراعة	
2	م. حسن عيسى	مدير عام مشروع دلتا طوكر	
3	م. عمر علي عثمان	نائب مديرعام مشروع دلتا طوكر	0915011336
4	ب. أحمد عبد العزيز	مدير جامعة البحر الأحمر	
5	د. آدم علي	عميد كلية الزراعة - ج البحر	
6	السيد/ الحسن بيرك أوهاج	المدير الزراعي بالمشروع	
7	السيد/ طاهر هاشم عثمان	مدير إدارة المسكيت - طوكر	
8	د. إبراهيم الضاوي	مدير إدارة البحوث الزراعية	
9	السيد/ عبدالله محمد عثمان	مفتش القسم الزراعي الأول	
10	السيد/ محمد إبراهيم خليل	مفتش القسم الزراعي الثاني	
11	السيد/ محمد عثمان يحيى	مفتش القسم الزراعي الثالث والرابع	
12	السيد/ علي الأمين نابوسي	رئيس قسم الري	
13	السيد/ جعفر هاشم محمد مدني	رئيس قسم المساحة	
14	السيد/ محمد إبراهيم آدم	رئيس قسم الأراضي	
15	السيدة/ زينب الباقرعثمان	رئيس القسم العمومي	
16	السيدة/ خديجة خالدحسين	المدير المالي	
17	السيد/ محمد عبدالله الطاهر	وزارة الزراعة	
18	السيد/ علي موسى بيرك	وزارة الزراعة	
19	السيد/ عثمان عوض	وزارة الزراعة	
20	السيد/ علي عمر هماج	وزارة الزراعة	
21	السيد/ مجذوب علي أبوعلي	مشروع دلتا طوكر - لجنة المزارعين	
22	السيد/ خالد عثمان البصيري	مشروع دلتا طوكر - لجنة	
23	السيد/ الأمين جيلاني	مشروع دلتا طوكر - لجنة	
24	السيد/ عبدالله محمد أحمد	مشروع دلتا طوكر - لجنة	
25	السيد/ علي آدم	مشروع دلتا طوكر - لجنة	
26	السيد/ ربهام محمد محمود	مشروع دلتا طوكر - لجنة	
27	السيدة/ فاطمة إدريس	مشروع دلتا طوكر - لجنة	
28	السيد/ حامد محمود حسين	مشروع دلتا طوكر - لجنة	
29	السيد/ سعيد عثمان	مشروع دلتا طوكر - لجنة	
30	السيد/ محمود شيبية	مشروع دلتا طوكر - لجنة	
31	السيد/ محمد دين صلاب	رئيس جمعية أبوهدي لتتمية المجتمع	
32	السيد/ محمد مجذوب طاهر	ممثل إتحاد الرعاة	
33	السيد/ حسن أبوظامة محمد مجذوب	مدير البنك الزراعي - طوكر	
34	السيد/ حسين سر الختم	منظمة الفاو	
35	السيد/ عبدالقادر عمر أوهاج	مدير الإرشاد الزراعي بوزارة الزراعة	

	مزارع	السيد/ عبدالله موسى	36
	مزارع	السيد/ كامل محمد نور	37
	مزارع	السيد/ عبدالرحيم محمد علي	38
	مزارع	السيد/ محمد عبدالله محمد زروق	39
	مزارع	السيد/ هاشم أوهاج	40
	مزارع	السيد/ محمد محمد علي	41
	مزارع	السيد/ علي حامد	42
	مزارع	السيد/ محمد علي عمر المبارك	43
		السيد/ باكاش أبوطاهر	44

- مشروع خور أبو حبل الزراعي

الرقم	الاسم	الجهة/المهنة	التلفون/الإيميل
42	م. مكي عبدالله آدم	مدير المشروع	0122245295
43	م. أمجد أحمد حمد الصافي	مهندس زراعي	
44	السيد/ فتحي أحمد فضل الله	مشروع خ أبو حبل الزراعي	
45	السيد/ عثمان عبد الرسول عامر	المزارعون المنتجون - الزهد	
46	السيد/ حنفي مكي الخليل	المزارعون المنتجون - السميح	
47	السيد/ الصادق عبدالله بشير	المزارعون المنتجون	

- مشروع حوض السليم الزراعي ومشروع القاش الزراعي والبحوث الزراعية (كسلا)

الرقم	الاسم	الجهة/المهنة	التلفون/الإيميل
48	م. راشد بكري محمد أحمد	مشروع حوض السليم	0911240513
49	م. محمد علي محمد نور	مشروع القاش الزراعي	
50	م. محمد عبدالله أحمد	مفتش كسلا	
51	م. أحمد أبوطاهر	مفتش دقيقين	
52	السيد/ بربير أدروب مصطفى	مشروع القاش - مزارع	
53	السيد/ أحمد محمد عمر	مشروع القاش - مزارع	
54	السيد/ عمر محمد آدم	مشروع القاش - مزارع	
55	السيد/ ماقيت	مشروع القاش - مزارع	
56	السيد/ عبد الله الحسن يوسف	هيئة البحوث الزراعية - كسلا	0912563615

- وزارة الموارد المائية والري والكهرباء

الرقم	الاسم	الجهة/المهنة	التلفون/الإيميل
57	م. يوسف عبدالكريم عبدالله	وحدة ترويض نهر القاش	
58	م. أحمد محمد علي عبد الله	مشروع دلنا طوكر	
59	م. صلاح الدين العوض	وحدة تنفيذ السدود - حصاد المياه	0123414874

- المشاركون من المركز

الرقم	الاسم	الجهة	التلفون/الإيميل
1	د. أحمد آدم إبراهيم	مركز البحوث الهيدروليكية	
2	أ. مشارك. أبو عبيدة بابكر أحمد	مركز البحوث الهيدروليكية	0123813813
3	د. أبراهام مهاري هابلي	MetaMeta / HRC-Sudan	
4	م. أميرة عبدالرحيم عبدالقادر	مركز البحوث الهيدروليكية	0915010681
5	السيد/ مكفرسون نتارا	FBLN - Malawi	
6	م. أحمد عبدالباقي الأمين	مركز البحوث الهيدروليكية	0919560326
7	م. أبوبكر محمد عبدالرحيم	مركز البحوث الهيدروليكية	
8	م. عمر محمد نور	مركز البحوث الهيدروليكية	
9	م. نازك عبدالله	مركز البحوث الهيدروليكية	
10	أ. تهاني جاد الله	مركز البحوث الهيدروليكية	
11	أ. عمران الجميعابي	إعلامي - قناة S24	
12	السيد/ أحمد بحرالدين	مركز البحوث الهيدروليكية	

Annex 2: Workshop program

Time	Topic	Speaker	Chair/Reporter
Day 1: 14 July 2018			
8:30-9:00	Registration	Eng. Omer M. Noor	Dr. Ahmed Kabo
9:00-9:20	Welcoming Remarks	Dr. Ahmed Kabo, Eng. Omer Ali	
9:20-9:40	Official Opening	State representative	
9:40-10:00	Africa to Asia research project in Sudan: Achievements, lessons learned and plans ahead	Eng. Amira Mekawi	
10:00-10:30	Refreshments		
Session 2: Research results, knowledge & experience sharing from across Sudan & beyond			
10:30-10:50	Beyond crop and livestock production – some untapped opportunities for improved rural livelihood in FBLS areas	Dr. Abraham Haile	Dr. Salah/Eng. Mekki
10:50-11:10	Experiences from the Africa to Asia project partners in the region (Malawi)	Mr. Macpherson Nthara	
11:10-11:30	Spate systems in Sudan: contribution to food security in Sudan and Toker in particular	Assoc. prof. Abu Obieda Babiker	
11:30-11:50	Interventions on farm level to enhance water management (Experiences from GAS)	Eng. Ahmed A. Bagi	
11:50-12:30	Guided discussions	Participants	
Session 3: Insights into Khor Baraka / Delta Toker Agricultural Scheme			
12:30-12:50	Hydrology of Khor Baraka	Dr. Ahmed Kabo	Dr. Abraham/Assoc. prof. Abu Obieda
12:50-13:10	Delta Toker Agri. Scheme: identification of challenges/proposed solutions	Eng. Omer Ali	
13:10-13:30	Presentation of new findings – Delta Toker	Dr. Salah Yousif	
13:30-14:10	Guided discussions	Participants	
14:10-15:00	Lunch & Prayers		
Session 4: Sharing experiences / good practices			
15:00-15:15	Insights on GAS	Eng. M. Ali Mohamed Noor	TBD
15:15-15:30	Khor Abu Habil Agri. Scheme: contribution to food security and future visions	Eng. Mekki Abdalla	
15:30-15:45	Hud Elsilem Agri. Scheme: challenges and achievements	Eng. Rashid Bakri	
15:45-16:15	Sharing experiences / good practices	Farmers (GAS, Abu Habil, Toker, Silem)	

Time	Topic	Remarks
Day 2: 15 July 2018		
Morning Session: Field visit to Delta Toker Agricultural Scheme		
6:00-12:00	Field visit will cover scheme headquarter at Tokeraud irrigation system infrastructure of the scheme on Khor Baraka.	Eng. Omer Ali
Afternoon session: Formulating research programme for Delta Toker Agricultural Scheme		
12:00-12:20	Outline of research topics/themes	HRC-Sudan
12:20-13:00	Group discussions – prioritizing the research topics/themes	Participants
13:00-13:30	Wrap-up	HRC-Sudan

Annex 3: Local coverage of El Sudani (right) and Elgezira (left) newspapers



Annex 4: Workshop photographs

Day one:



Photo 1: Workshop participants



Photo 2: Side view of workshop participants



Photo 3: Presentation by Dr. Abraham M. Haile



Photo 4: Sharing experiences from Malawi presented by Mr. Macpherson Nathara



Photo 5: Presentation on Toker Delta Agricultural Scheme by Eng. Omer Ali



Photo 6: Interactions from participants

Day two:



Photo 7: Side view of the field visit



Photo 8: The bridge crossing Khor Baraka



Photo9: Entrance point of Khor Baraka to the Delta



Photo 10: Mesquite infestation



Photo 11: Discussions of one of the working groups during the closing session



Photo 12: Distribution of attendance certificates at the end of the workshop