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Local Capacity Building and Partnership Development for Sustainable Water Resources Management in the Hadejia Jama'are Komadugu Yobe Basin - Lessons from the Activities of HJKYB Trust Fund, Damaturu, Yobe State

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Authors' contributions

This work was carried out in collaboration between authors IAH and BB. Author IAH designed the study, wrote the protocol and supervised the work. Both authors carried out all field work and performed the statistical analysis. Both authors managed the analyses of the study. Author IAH wrote the first draft of the manuscript. Author BB managed the literature searches and edited the manuscript. Both authors read and approved the final manuscript.

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ABSTRACT

This paper examines the endemic and persistent water resources management problems facing the Hadejia Jama'are Komadugu Yobe Basin (HJKYB) and how the problems cripple livelihoods and sustainable water resources management in the basin. It goes on to outline the various efforts dedicated by all range of stakeholders to solving them. The paper further shows that, the creation of the HJKYB Trust Fund as "a child of necessity" is the most celebrated of all the efforts. Therefore it elaborates the achievements of the Trust Fund particularly its infrastructural interventions and the local capacity building activities as well as the economic importance of these activities to the inhabitants of the basin and the nation at large. In the end it brings out some factors that militate against the continued functioning of the HJKYB-TF and suggests measures for ameliorating them.

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1. INTRODUCTION

1.1 Water Resources Management Issues in Nigeria

Water is at the core of sustainable development and is critical for socio-economic development, healthy ecosystems and for human survival itself. It is vital for reducing the global burden of disease and improving the health, welfare and productivity of populations.

It is central to the production and preservation of a host of benefits and services for people.

Water is also at the heart of adaptation to climate change, serving as the crucial link between the climate system, human society and the environment. Without proper water governance, there is likely to be increased competition for water between sectors and an escalation of water crises of various kinds, triggering emergencies in a range of water---dependent sectors [1].

The world's freshwater resources are under increasing pressure. Growth in population, increased economic activity and improved standards of living lead to increased competition for and conflicts over the limited freshwater resource. A combination of social inequity, economic marginalization and lack of poverty alleviation programmes also force people living in extreme poverty to overexploit soil and forestry resources, which often results in negative impacts on water resources. Lack of pollution control measures further degrades water resources [2].

The world population has increased by a factor of about three during the 20th century whereas water withdrawals have increased by a factor of about seven. It is estimated that currently one third of the world's population live in countries that experience medium to high water stress. This ratio is expected to grow to two thirds by 2025 [3].

Population projections indicate that over the next 25 years food will be required for another 2-3 billion people. Water is increasingly seen as a key constraint on food production, on a par with, if not more crucial than, land scarcity. Irrigated agriculture is already responsible for more than 70% of all water withdrawals (more than 90% of all consumptive use of water). Even with an estimated need for an additional 15-20% of irrigation water over the next 25 years - which is probably on the low side – serious conflicts are likely to arise between water for irrigated agriculture and water for other human and ecosystem uses. Difficulties will be exacerbated if individual water-short countries strive for food self sufficiency rather than achieving food security through trade; by importing food countries can in effect import water from more generously endowed areas (the concept of "virtual water") [4].

Nigeria is considered as having abundant stock of water resources [5]. It is a federal state, and the management of the river basin and its water and wetland resources fall under the aegis of a complicated patchwork of Federal and State ministries, parastatals as well as formal and traditional rulers [6].

For the purpose of effective surface water resource management, Nigeria has been divided into eight hydrological areas/surface water provinces. The Hydrological areas are drained mainly by the River Niger and River Benue and their numerous tributaries as well as the Lake Chad and Oguta Lake and the rivers that discharge into them [3]. There are other important rivers that form part of the hydrological surfaces of Nigeria, these include the Gongola, Hadejia, Jama'are, Yobe, Komadugu-Gana, Kaduna and Zamfara in the north, and the Ogun, Osun, Imo, Cross and Anambra Rivers in the south. The Hadejia Jama'are Komadugu Yobe Basin (HJKYB) is within the hydrological area VIII.

2. THE HADEJIA JAMA'ARE KOMADUGU YOBE BASIN (HJKYB)

2.1 Location and Extent of the Hadejia Jama'are Komadugu Yobe Basin (HJKYB)

The HJKYB covers a total area of about 148,000 km^2 in north east Nigeria (95% of basin area) and south east Niger (5%). The basin is drained by two main river sub-systems. The first sub-system, the Yobe River, is formed by the Hadejia and Jama'are tributaries, which create the Hadejia Nguru Floodplain at their juncture. The second sub-system is the Komadugu Gana (or Missau) River. Historically, it is a tributary of the Yobe River, [7].

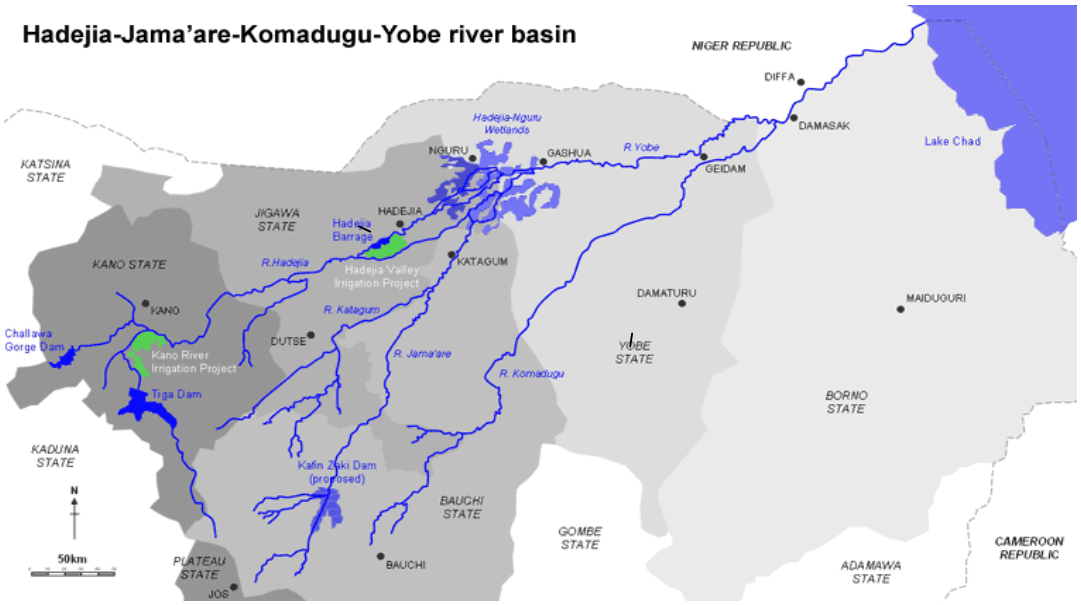

Fig. 1. Map of the HJKY Basin

The extent of the HJKYB and its river systems are shown in Fig. 1 above.

2.2 Uniqueness of the Basin

The HJKYB is considered to be of strategic national and international importance. It is the source of internationally shared water whose management in Nigeria has an important bearing on diplomatic relationships between Nigeria and four countries (Niger, Chad, Cameroon and Central African Republic). These countries share the Lake Chad basin in which the Komadugu Yobe sub-basin is located [8]. The basin is located in a semi-arid region; it is a wetland in dry land, very rich in water resources. It has a dense concentration of population that is heavily dependent on its land and water resources. It has a population of about 15 million people that critically and increasingly dependent on its scarce land and water resources for livelihoods. The HJKYB is a basin where dependence on the water resources increases due to population growth and the water gets less and less. It is the only basin that drains into a lake rather than the Atlantic Ocean. It also houses the Chad Basin National Park within which the Dagona Water Fowl Sanctuary is located. The popular Hadejia-Nguru Wetlands are also within the HJKY basin [9]. The Nigerian premier Ramsar Site is also within the Hadejia Nguru Wetlands.

3. WATER RESOURCES MANAGEMENT PROBLEMS IN THE HADEJIA JAMA'ARE KOMADUGU YOBE BASIN (HJKYB)

3.1 The Problems

Due to the semi-arid conditions of the basin, scarcity of water has been, and continues to be the major stimulus of the major development initiatives. This has placed the integrity of the HJKYB at risk. Presently, substantial proportions of the available water sources that can possibly be economically exploited have already been developed or are in the process of being developed. The estimated demand for water in the basin by formal users alone stands at about 2.6 times the available water [10].

There had been long term failures in the management of the river system driven by dams' operation failures. The flow of the River Hadejia, downstream of Madachi is said to be affected by the upstream dams, the marshes at Madachi and Nguru and the Nguru Lake. These tend to accentuate the effects of any adverse hydrological changes in the basin. The contribution of the Hadejia River to the flow of the Yobe is reduced so much so that in some years, there won't be any contribution at all. There is also the history of recurrent farmer/herder conflict over the scarce land and water resources of the area [11].

Failures in the management of land and water resources led to the blockage of channels by silts and invasive weeds, thus culminating into two extreme and opposite events in different parts of the basin namely inundation and desiccation. These coupled with increases in human and animal populations, resulted into increasing dependence on the water resources and this culminated into increasing demand for water resources particularly from downstream areas of the basin. The vivid aftermath of the scenario is often tension and conflict.

The tension and conflict are having profound effects on the lives of the population. Poverty has been on the increase among the citizens, having increased by ten-fold or 1000% between 1998 and 2003 [12]. The basin has therefore characterized by natural resources degradation, entrenching poverty and general social insecurity for many years now [13].

3.2 Attempts to Salvage the Basin

Several attempts have been made in the past to address some of the water resources problems of the basin, particularly the equitable access to the water resources for all users and uses. However these attempts have met with limited successes primarily due to inadequate knowledge base on the natural resources of the basin, unilateral water resources development by riparian states, the absence of a Catchment Management Plan as well as apparent lack of political will to implement the necessary measures to ensure sustainable use of and equitable access to the land and water resources of the basin for all uses and users [14].

One of the major attempts was an integrated approach, involving three donor supported projects, Federal Ministry of Water Resources (FMWR)- International Union for Conservation of Nature (IUCN)- Nigerian Conservation Foundation (NCF) Komadugu Yobe Basin (KYB), Department for International Development (DFID)- Joint Wetlands Livelihood (JWL) and Lake Chad Basin (LCB)- Global Environmental Facility (GEF) projects (FMWR-IUCN-NCF KYB, DFID-JWL & LCB-GEF projects), led by the Federal Ministry of Water Resources. These made an onslaught on all the challenges outlined above, some of which started in late 2002, with others still going on [4]. The major outcomes of the onslaught include stakeholder consultative sessions, completion of several knowledge based studies including the *Water Audit* of the basin, stakeholder analysis, biodiversity study as well as feasibility studies for flow proportioning. There was also the preparation and adoption of a Catchment Management Plan (CMP) by the stakeholders. The Catchment Management Plan (CMP) is a comprehensive integrated water resources management strategy to foster synergy, equity and efficiency in the use of the scarce water resources of the basin and development of water charter. The most historic and celebrated of all these efforts is the formation of HJKYB-TF.

3.3 Formation of the Trust Fund

The diagnosis by stakeholders: IUCN- Hadejia Nguru Wetlands Conservation Project (HNWCP), DFID-JWL, FMWR-IUCN-NCF, LCBC-GEF, Integrated Management Coordinating Committee (IMCC), Technical Action Committee (TAC) etc through studies and practical interventions, revealed that the absence of an integrated approach to effectively manage the water resources challenges of the HJKYB is the cause of poverty in the basin [5]. It was in realization of this fact that the six riparian states (Plateau, Bauchi, Kano, Jigawa, Yobe and Borno) converged from 5th-9th June, 2006 at a **summit tagged "Summit of Six Riparian Governors"** at Damaturu. The summit called for immediate action to salvage the basin. The summit was supported by the Federal Government of Nigeria and witnessed by neighboring Governors of Diffa and Zindar Provinces of Niger Republic. The Hadejia Jama'are Komadugu Yobe Basin Trust Fund was endowed with seed money by the riparian state to which the federal government provided a matching grant [4]. The HJKYB Trust Fund was mandated to implement the Catchment Management Plan (CMP) and other activities to augment line agencies in addressing the land and water resources issues of the HJKY Basin.

A 15-man Board of Trustees (BoT) was formed to oversee the affairs of the Trust Fund. The BoT created a secretariat which prepared a Trust Deed and drew out the vision, mission and strategic objectives of the fund as follows:

Vision: A Basin where water resources are equitably and effectively distributed and regulated based on stakeholder consensus.

Mission: Integrated water resources management (IWRM) practice implemented in the basin.

3.4 Strategic Objectives

1. Capacity of the Trust Fund for executing its mandate developed;
2. Funds raised for administration and execution of projects;
3. Awareness raised for efficient use of water and environmental management by communities, Civil Society Organisations (CSOs), Line Agencies and the Private Sector;
4. Partnerships built for the joint planning and execution of projects that promote Integrated Water Resources Management (IWRM);
5. Communities empowered for managing commonly owned infrastructures and environmental situations, and negotiating for services and access to resources;
6. Catalyzed Policy and Institutional Reforms that make IWRM practice attractive and viable;
7. Facilitate the execution of infrastructural projects that will allow the flow of water according to agreed allocations facilitated;
8. Creation and broadening of a decision support system for land and water resources development in the basin.

In addition to the vision, mission and strategic objectives, the BoT appointed a technical committee which assisted it and extracted activities from the CMP and divided the tasks into short, medium and long terms for ease of implementation by the HJKYB-TF secretariat. The Trust Fund started executing the short and medium terms activities in 2008. The contributions of the HJKYB-TF towards salvaging the HJKYB both in forms of infrastructural projects, capacity building and specialized studies are summarized below.

4. CONTRIBUTIONS OF THE HJKYB TRUST FUND TOWARDS SALVAGING THE BASIN

4.1 Infrastructures

The Trust Fund executed infrastructural interventions in order to send water to where it is needed and away from where it is not needed, in that way preventing un-wanted flooding in the upstream and mid-stream and avoiding desiccation in the downstream areas of the basin.

Two types of gates, single cell and double cell, were constructed in different parts of the basin depending on the width of the channel that is intended to be tapped. Six (6) flood retention double cell gates and five single cell flood gates were constructed across the basin in 2008 and 2009.

Table 1a. List of double cell flood control gates with wing walls in the HJKYB

S/N	Location/LGA	Qty	State
1.	Reni Kunu, Bursari LGA	2	Yobe
2.	Kalgeri, Geidam LGA	1	Yobe
3.	Yusuri, Mobbar LGA	1	Borno
4.	Damasak, Mobbar LGA	1	Borno
5	Joka Juriye, Mobbar LGA	1	Borno
	Total	**6**	

Table 1b. List of single cell gates

S/N	Location/LGA	Qty	State
1.	Gidan Tuku, Warawa LGA	1	Kano
2.	Arki, Malam Madori LGA	1	Jigawa
3.	Jiyan, Kiri Kasamma LGA	1	Jigawa
4.	Dagona, Bade LGA	1	Yobe
5.	Karage, Jakusko LGA	1	Yobe
	Total	**5**	

Tables 1a and b above show the lists and locations of the double cell and single cell gates.

Table 2a. Channel clearance

S/N	Location/LGA	State
1.	Miga, Miga LGA	Jigawa
2.	Magujin Idi	Jigawa
3.	Kissingin, Kafin Hausa LGA	Jigawa
4.	Gwayo, Jakusko LGA	Yobe
	Total	**4**

Table 2b. Sample flood control earth dyke

S/N	Location/LGA	Quantity	State
1.	Badyeso Dagu, Warji LGA	1	Bauchi
2.	Faggo, Shira LGA	1	Bauchi
3.	Gidan Tuku, Warawa LGA	2	Kano
4.	Ariri, Zaki LGA	2	Bauchi
5	Malumawar Futi	1	Bauchi
	Total	**7**	

Channel Clearance was carried out in four locations for the purpose of desilting the blocked channel in order to allow free flow of water, namely at Miga, Kissingin and Magujin Idi all in Jigawa state, Gwayo in Yobe State. The Gwayo project got re-blocked after a few rains simply because of the flat and sandy nature of the area. Tables 2a gives the locations of channel clearance while Table 2b shows the site where earth dykes were constructed.

Seven earth dykes covering 9.1km in Kano and Bauchi states at Ariri, Zaki local government area of Bauchi state, Badayeso, Warji local government, Faggo Shira local and Malumawar Futi all in Bauchi state and Gidan Tuku in Warawa local government area Kano state were constructed also as given in Table 2b.

One Concrete Trapezoidal spillway 74 Metres Long was constructed at the Nigeria Niger border in Bulagana Chira, Abadam local government area, Borno state. This spill way serves to send away excess flood water from the farmlands of three communities namely Bulagana Chira, Lamba and Malam Fatori back into the main river as given in the Tables 3a and b.

Concrete Dyke was constructed at Yituwa, Abadam local government area, Borno state as given in Table 4a. The longest concrete flood retention wall was constructed at Yusuri near Damasak, Mobbar local government area, Borno state as Table 4b shows.

One Gabion measuring 30 metres with 300 metres dyke were constructed at Faggo, Shira Local Government Area Bauchi State see Table 5a.

The HJKYB-TF constructed eight (8) with collection facilities (Concrete Slap and Dino Bins) under its 2008 infrastructural intervention as sampled above for pollution control, Table 5b. It constructed one concrete Spillway was constructed at Kanamma Yunusari local government area of Yobe state as indicated in Table 6. It serves in taking away excess flood water from the farmlands into the river towards the magnetic pole at the Nigeria Niger border. Annex 1 gives samples of the infrastructural interventions of the HJKYB-TF.

4.2 Formation of Local Project Management Committees

The HJKYB-TF formed a local project management committee (LPMC) for each of its infrastructural interventions with the exception of the one in Plateau state. The purpose of the committee is to empower the beneficiaries with project management skills and ensure complete ownership of the projects by benefiting communities in order to guarantee the sustainability.

Each LPMC has a range of officials from chairman, secretary, treasurer, financial secretary and public relations officer etc. The chairman of the concerned local government council is given the post of grand patron while the traditional leadership is given the role of patron. Again each LPMC has its community agreed operational rules, monitoring procedures, local sources of funds and community level financial management strategies.

Table 3a. Concrete dyke

S/N	Location	Quantity	State
1.	Ba'ariman, Abadam LGA	1	Borno
	Total	**1**	

Table 3b. Trapezoidal spill way

S/N	Location	Quantity	State
1.	Bulagana Chira (Chari Kari)	1	Borno
	Total	**1**	

Table 4a. Concrete dyke

S/N	Location/LGA	Quantity	State
1.	Yituwa, Abadam LGA	1	Borno
	Total	**1**	

Table 4b. Concrete flood retention wall

S/N	Location/LGA	Quantity	State
1.	Yusuri, Mobbar LGA	1	Borno
	Total	**1**	

Table 5a. Gabion structure

S/N	Location/LGA	Quantity	State
1.	Faggo, Shira LGA	1	Bauchi
	Total	**1**	

Table 5b. Refuse management dust bin

S/N	Location/LGA	Quantity	State
1.	Dilimi River Bank, Jos North LGA	8	Plateau
	Total	**8**	

Table 6. Concrete spillway

S/N	Location/LGA	Quantity	State
1.	Kanamma, Yususfari LGA	1	Yobe
	Total	1	

The cumulative impact of the infrastructural interventions has led to the reclamation of some 7000 hectares of farmland that used to be lying as waste land prior to the interventions, increased fishing activities, increased catches and increased livestock production. This has led to huge increases (un-estimated) in the incomes of the basin communities that are natural resources dependent. More important is the fact that the projects have built the capacities of benefiting communities in joint community management of water resources infrastructures in demanding for services from their elected representatives. Many communities are asking for similar structures from the government.

4.3 Establishment and Re-activation of Hydro-met network

In addition to the construction of infrastructural facilities outlined above, the HJKYB Trust Fund reactivated hydrological and meteorological networks in order to improve the data situation in the basin to meet the minimum standard of the World Meteorological Organization (WMO). This is in order to provide data for informed land and water resources planning.

Historically up to 1990 the situation of hydrological data in the basin was excellent due to the efforts of Kano State owned agency known as Water Resources and Engineering Construction Agency (WRECA), which was single handedly collecting hydrological data from Kano up to the shores of the Lake Chad. Unfortunately with the creation of states in 1991 WRECA relaxed in that effort. It is only with the creation of the HJKYB-TF that basin wide data collection has re-commenced by a single organization. The HJKYB Trust Fund consultants were engaged and they toured the basin and appraised the conditions of hydrological and meteorological data collection and data collection stations. The consultants recommended the establishment of new stations and rehabilitation of existing ones across the basin in order to meet the minimum standard as per the World Meteorological Organisation (WMO) standard.

HJKYB-TF has rehabilitated existing and established new hydrological and meteorological stations across the basin. The activities involved replacement of obsolete equipment and provision of new ones in areas where none existed before.

4.3.1 New hydrological stations

In implementing the recommendations of the consultants, the HJKYB-TF awarded contracts for the supply of all equipment needed for the exercise. After the supply, the consultants were re-invited to ascertain that the equipment supplies are genuine before accepting the orders. After the certification by the consultants, the stage boards were installed in all the identified locations. In addition to that four automatic loggers were installed, one each at Kari Bridge, Bunga Bridge, Tamburawa Bridge and Wudil Bridge.

Data collectors working for the organizations that had hydrological and meteorological stations and new ones for the newly established stations were identified and trained for the job. The HJKYB-TF invited all the line Directors from the various Ministries, Departments and Agencies (MDAs) under whose areas of jurisdiction a rehabilitated or new station has fallen and signed Memorandum of Understanding (MOU) on data management with them. According to the MOU the HJKYB-TF would pay the data collectors' allowances for two years and establish a data base for collating the data. After the expiration of two years the various organizations are to take over the payment of data collector allowances while sharing the data with the HJKYB-TF for updating the data bank. Now this arrangement has been completed for hydrological network and the stations have been handed over back to their respective organizations. Despite the handover of hydrological stations to their respective organizations, the HJKYB-TF is still conducting direct monthly river flow measurement using Acoustic Doppler Current Profiler (ADCP) flow meter from the last week of July to end of December every year. Meanwhile the meteorological component is going on.

The HJKYB-TF has developed partnership through MOUs on hydrological and meteorological management of the basin with Nigerian Hydrological Services Agency (NIHSA), Nigerian Meteorological Agency (NIMET), and Directorate for Technical Cooperation in Africa (DTCA), and states IWRMCs.

Table 7 shows the hydrological stations rehabilitated or established by the HJKYB-TF on the river systems of the HJKYB under its Hydrological data management intervention. It can be seen that a total of twenty four stations were rehabilitated and nine new ones were established. In addition to that four loggers were installed as already mentioned.

Table 8 gives the meteorological stations rehabilitated or established by the HJKYB-TF in the HJKYB under its meteorological data management intervention. A total of forty nine stations were rehabilitated and established out of which twenty two were rehabilitated and twenty seven were new. In addition to that one automatic weather station was established at the Department of Geography Bayero University Kano. The hydrological and meteorological interventions have improved data collection and management, improved the capacities for data collector and increased the eagerness of the organizations responsible for data management. The interventions have also created partnership among national and international organizations that have a stake in the data management of the basin.

4.4 Re-demarcation of International Stock Route

Farmer/herder conflict over access and control of land and water resources was one of the major problems confronting the HJKYB. The Trust Fund ventured into the issue and provided support to Komadugu Yobe Basin Wetlands Development Initiative (KYB-WDI) that piloted the re-demarcation of 100 kilometers of international stock route starting from the Nigeria-Niger border in Yobe state through Jigawa and Bauchi states parts of the Hadejia-Ngruru Wetlands. The route provided linkage between the HNW and Benue Valley and in that way reducing pressure on the HNW grazing resources and minimizing cases of farmer-herder clashes.

The exercise adopted the PASSEL approach of building social contract between farmers, herders, local government councils, traditional rulers and villages' associations. All categories of stakeholders contributed in cash or in kind and participated in the stock route re-demarcation process. The process has been appreciated by individuals and organizations working for the basin. Now Lake Chad basin Commission (LCBC) Programme for the Development of Lake Chad Basin (PRODEBALT) Project has already released invitation for bids for the re-demarcation of another 100 kilometers of stock route by using the same approach.

The process of the pilot re-demarcation of international stock route though building social contract, has brought a viable option for reducing tension and conflict over access to and use of natural resources by farmers and cattle herders. It has also relieved tension on the recourses by proving a corridor to another grazing resort.

4.5 Flood Management Studies

Annual River Flooding is another serious menace facing the basin particularly in parts of Kano and Jigawa states. In order to alleviate the problem the HJKYB-TF commissioned Royal Haskonings who carried out a study on flooding in the basin and produced a road map for controlling it. The road map was presented to all stakeholders for implementation. The road map has shown regret and non-regret measures for flood management in the basin.

Table 7. Rehabilitated and new hydrological stations in the HJKYB

Hydrological stations/ River system	Hadejia river system	Jama'are river system	Komadugu Gana river system	Yobe river system	Total
Rehabilitated	12	5	2	5	24
New	2	4	1	2	9
Total	**14**	**9**	**3**	**7**	**33**

Table 8. Rehabilitated and new meteorological stations in the HJKYB

Meteorological stations/State	Plateau state	Bauchi state	Kano state	Jigawa state	Yobe state	Borno state	Total
Rehabilitated	3	8	5	3	2	2	22
New	3	6	3	3	8	5	27
Total	6	14	8	6	9	7	49

4.6 Fisheries and Fish Enterprises Development

After crop farming, fishing is the second major occupation of the basin communities. Fishing has been suffering setbacks since the late 1990s due to prevalent flooding, inundation, desiccation and typha grass infestation in different parts of the basin. The HJKYB-TF commissioned consultants that carried out a study on fisheries and fish enterprises in the basin. The consultants recommended measures for improving the situation. The report has been distributed to the riparian states. Based on the report, the HJKYB-TF has identified one project that it will execute in each of the six riparian states as pilot to encourage replication. The report has provided options to the riparian states and donor agencies with potential intervention windows.

4.7 Socio-economic Studies

Prior to the commencement of its infrastructural intervention projects the HJKYB-TF conducted a survey and collected baseline data on the socio-economic characteristics of all communities that were intended to benefit from the infrastructural interventions in 2008. It also conducted a repeat survey for comparism in the same communities after benefitting from the infrastructural interventions for one year in order to assess the preliminary impacts of the intervention on the beneficiaries. The socio-economic studies show that the infrastructural project helped to cut down the rate of dry season migration among youths and reduce rural poverty, in that way improving livelihoods of all beneficiaries.

4.8 Resuscitation of Stakeholder Consultative forum and Other Committees

Prior to the creation of the Trust Fund, there were the HJKYB Stakeholder Consultative Forum (SCF) HJKYB Coordinating Committee (HJKYB-CC), HJKYB Technical Action Committee (HJKYB-TAC), and States Integrated Water Resources Management Committee (SIWRMC) in each of the six riparian States formed and funded by DFID JWL Project. These platforms were instrumental to the formation of the HJKYB Trust Fund. But with the closure of DFID JWL project, the support for all of them ceased, and their contributions towards water resources management in the basin equally reduced. The DFID JWL Project also formed the KYB-Wetlands Development (KYB-WDI) Initiative as its exit strategy.

But with the formation of the HJKYB-TF, it took up the challenge and resuscitated the HJKYB-SCF since 2009 and started hosting its meeting annually in order to brief stakeholders on the state of water resources management in the basin and resolve any impasses. When Bauchi state expressed the intention for the construction of Kafin Zaki Dam, the HJKYB-TF intervened through the SCF to get the two opposing sides to be talking to each other. The trust fund facilitated the formation and inauguration of a steering committee and sub-committees (Technical, Constitution Drafting, Fund Raising and Advocacy) in 2009 for the HJKYB-SCF to function effectively. It further organized three round table discussions for resolving current issues of water resources management for Yobe and Borno, Kano and Jigawa and Bauchi and Plateau.

The HJKYB-TF also reactivated both HJKYB-TAC into a committee of Permanent Secretaries from Ministries of Water Resources, Agriculture and Environment and the Managing Directors of the two River Basin Development Authorities in the basin namely Hadejia Jama'are River Basin Development Authority (HJRBDA) and Chad Basin Development Authority (CBDA) in the year 2009. Members of the committee renamed it as HJKYB Joint Advisory Committee (HJKYB-JAC). HJKYB-JAC meeting is held quarterly in rotation around the six riparian states with funding from HJKYB-TF and counter funding from the hosting state.

Similarly the HJKYB-TF re-activated the state Integrated Water Resources Management Committees (SIWRMCs); later in one of their joint meetings members changed the name to States Integrated Water Resources Management Coalition (SIWRMCs) in each of the six riparian states. A joint secretariat was formed with support from the HJKYB Trust Fund for coordinating the affairs of the SIWRMCs.

KYB-WDI as Non Governmental Organisation (NGO) did not cease to function after the DFID JWL Project. It continued with funding from 20 local government councils from Jigawa, Yobe and Bauchi states that fall within the Hadejia-Nguru Wetlands (HNW).

The Trust Fund supported the six SIWRMCs and KYB-WDI with two Million Naira grant each yearly for two years to empower them in the promotion of sustainable water resources management in the basin.

4.9 Reactivation and Formation of Resource Management Associations

One of the most laudable capacity building activities in land and water resources management executed by the HJKYB Trust Fund is the formation of regional Community Based Organisations (CBOs) in the basin in emulation and in appreciation of the activities of the DFID JWL Project's formed KYB-WDI. The HJKYB-TF in collaboration with DFID Coalition for Change (C4C) Issue-Based Project formed one regional CBO in northern Borno known before as northern Borno CBO, now known as Downstream Development Association (DDA). The HJKYB-TF has on its own formed two sister CBOs in Bauchi and Kano states as part of the HJKYB. The formation of regional CBOs is to develop the capacities of local population in water resources management. The northern Borno CBO has already reached an NGO status and is registered with the Corporate Affairs Commission (CAC).

The most important achievement of the HJKYB Trust Fund is in the areas of bringing the basins' stakeholders together and partnership building [6]. All stakeholders in the basin ranging from policy makers to decision makers, traditional rulers and resources users converge in the annual stakeholder consultative forum and during presentations of reports such as the road map for flood control. The riparian states and the RBDAs are now talking to each other and taking joint decisions through Joint Advisory Committee (JAC) meeting. The states IWRMCs, KYB-WDI and the regional CBOs are serving as links between the states, HJKYB-TF and the stakeholders.

5 CHALLENGES

Despites the contributions of the HJKYB Trust Fund towards land and water resources and livelihood enhancement in the basin, it is facing a lot of challenges that are threatening its continued functioning. The most prominent among these is funding, since the seed money granted to at its formation in 2006, the Fund has not received any endowment from the federal or riparian state governments. The Fund has been subsisting on that initial contribution since the summit. Again the tenure of its board members has expired and no replacement has been made. One internal factor of the Trust Fund that undermines its continuity is insufficient fund raising strategy and lack of follow-up with the states.

Another important limiting factor is lack of statutory mandate for the Trust Fund for executing its mandate and to act as a basin organization. Again there is the conflict among riparian states especially over the construction of Kafin Zakin Dam and other water resources development intentions by individual states.

The non-endorsement of the water charter by five out of the six riparian states is also a stumbling block to proper and all inclusive decision making and action in the basin.

6. CONCLUSION

The cumulative impact of the twenty two (22) infrastructural interventions and four channel clearance activities have led to the reclamation of some 7000 hectares of farmland, increased fishing activities and increased livestock production. This has led to un-estimated increases in the incomes of the basin communities. More importantly the projects have built the capacities of twenty eight (28) communities in joint community management of water resources infrastructures and demanding for services from their elected representatives. Similarly the revamping of 33 stage-board hydrological stations and four loggers and 49 meteorological stations and one automatic station have improved data collection and management in the basin, improved the capacities for data collectors and increased the eagerness of the organizations responsible for data management. The interventions have also created partnership among national and international organizations that have a stake in the data management of the basin.

The process for the pilot re-demarcation of 100 km of international stock route though building social contract, has brought a viable option for reducing tension and conflict over access to and use of natural resources by farmers and cattle herders. It has also relieved tension on the resources by proving a corridor to another grazing resort. The road map for flood control has brought out potential intervention windows for flood management in the basin. The socio-economic studies show that the infrastructural project help to cut down the rate of dry season migrations among youths reduce rural poverty and improve livelihoods of all beneficiaries.

The most important achievement of the HJKYB Trust Fund is in the areas of bringing stakeholders together and partnership building. All stakeholders in the basin ranging from policy makers to decision makers, traditional rulers and resources users converge in the annual stakeholder consultative forum and during presentations of reports such as the road map for flood control. The riparian states and the RBDAs are now talking to each other and taking joint decisions through JAC meeting. The states IWRMCs, KYB-WDI and the regional CBOs are serving as links between the states, HJKYB-TF and the stakeholders. The formation of regional CBOs is developing the capacities of local populations in land and water resources management. Despite all these contributions of the Trust Fund its future is financially bleak. In spite of the HJKYB-TF's challenges, it remains a very good experiment and experience IWRM.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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