

## Water Management Issues in the Hadejia-Jama'are-Komadugu-Yobe Basin: DFID-JWL and Stakeholders Experience in Information Sharing, Reaching Consensus and Physical Interventions

Muhammad J. Chiroma, DFID-Joint Wetlands Livelihoods Project (JWL), Nigeria.  
mjchiroma@yahoo.com.

Yahaya D. Kazaure, Hadejia-Jama'are River Basin Authority, Nigeria. ydalha@yahoo.com.

Yahya B. Karaye, Kano State Water Board Nigeria. yahyakaraye@yahoo.com

Abba J. Gashua, Yobe State ADP Nigeria. abbajambo@yahoo.com

### Abstract

*The Hadejia-Jama'are-Komadugu-Yobe Basin (HJKYB) is an inter-state and transboundary basin in Northern Nigeria. Covering an area of approximately 84,000 km<sup>2</sup>, it is an area of recent drama in water resource issues. Natural phenomena combined with long-term institutional failure in management of water resources of the basin have led to environmental degradation, loss of livelihoods, resource use competition and conflicts, apathy and poverty among the various resource users in the basin. The Joint Wetlands Livelihoods (JWL) Project, which is supported by the United Kingdom Department for International Development (DFID), has been designed to address increasing poverty and other resource use issues in the basin. Specifically, JWL is concerned with demonstrating processes that will help to improve the management of common pool resources (CPRs) - particularly water resources - in the Hadejia-Nguru Wetlands (HNWs) in particular and the HJKYB as a whole as a means of reducing poverty. This process has brought together key stakeholders to form platforms for developing and implementing strategies to overcome CPR management problems. This is being pursued at three levels, i.e. basin, wetlands and community, but as an integrated programme. To facilitate the work of the platforms, JWL is promoting improvements in information generation and exchange, mechanisms for communication flow, co-ordination of activities between the key stakeholders and execution of pilot projects that demonstrate best practice and influence policy. During the last two years, a key learning point has been that bringing the stakeholders together to discuss CPR issues in the HJKYB has exposed many of the technocrats as well as some decision-makers to the problems in the basin, and the parties concerned have started to change their attitudes and disposition towards these problems. Based on this, together with the efforts and support provided by communities and people whose livelihoods depend directly on these CPRs, consensus has been reached by stakeholders over many issues in the basin and in some cases, collective intervention measures for overcoming some of the problems have been proffered and implemented. These attitudinal and dispositional changes, reaching consensus in decision and collective intervention measures taken by stakeholders, have been a key lesson for the JWL project.*

**Key words:** Consensus, Governance, Stakeholders, Livelihoods

### Introduction

The Hadejia-Jama'are Komadugu-Yobe Basin (HJKYB) drains a catchment of approximately 84,000 km<sup>2</sup> in northeast Nigeria (Figure 1) before discharging into Lake Chad. Politically, it covers five northern states, (Kano, Jigawa, Bauchi, Yobe and Borno). Over 15 million people are supported by the basin through agriculture, fishing, livestock keeping and water supply.

The two major rivers of the basin are the Hadejia and the Jama'are, which meet in the Hadejia-Nguru Wetlands (HNWs) to form the Yobe. The Hadejia river rises from the Kano highlands while the head-waters of the Jama'are river are in the Jos plateau. Within the Hadejia river system the natural pattern of runoff has been modified by the construction of dams and associated large-scale irrigation schemes, most notably Tiga and Challawa dams

and the Kano Irrigation Scheme (KRIP) in the upper basin, and the Hadejia valley irrigation project (HVP) in the middle of the basin. The Jama'are river is at the moment uncontrolled, but plans to construct a dam at Kafin Zaki have been under discussion for a considerable time.

In general, potential demand for water in the basin far exceeds available supply, albeit local variations in the quantity of demand and supply may occur. In 1998, studies by The World Conservation Union (IUCN)-managed Hadejia-Nguru wetlands conservation Project (HNWCP) indicated that estimated demand for surface water in the Hadejia river system exceeded available supply by 2.6 times. Estimated potential demand for water in the Hadejia river system has been calculated as  $4,528 \times 10^6 \text{ m}^3/\text{year}$ , while mean available water supply to the system is  $1,739 \times 10^6 \text{ m}^3/\text{year}$  (IUCN/HNWCP, 1999). Climatic downturn, inappropriate water management caused by conflicting responsibilities and lack of legislation over water use, increased demand due to population increase and urbanisation, etc have been implicated in this shortfall. The contribution of surface flow by the Yobe river into Lake Chad has been reduced to less than 1% since 1998. Siltation, proliferation of invasive weeds (particularly typha grass) and the appearance of potash (resulting from waterlogging) along river channels which now carry water all year round have further compounded the problem.

Furthermore, the absence of an integrated approach to water resources management in the basin, coupled with high water demands and competition for water by a wide range of users in the basin, has degenerated into various degrees of conflict.

In the last two years, the stakeholders in the HJKY basin have come together through a forum of their representatives, with the facilitation of the UK Department for International Development (DFID)-sponsored Joint Wetlands Livelihood Project, and shared understanding on the issues and problems in the basin, and in some instances reached consensus on interventions needed to address some of these issues.

This paper examines these issues and problems and how consensus was reached among the various stakeholders in the basin in identifying what the problems are and their root causes, and in taking decisions on what interventions are needed to solve them.

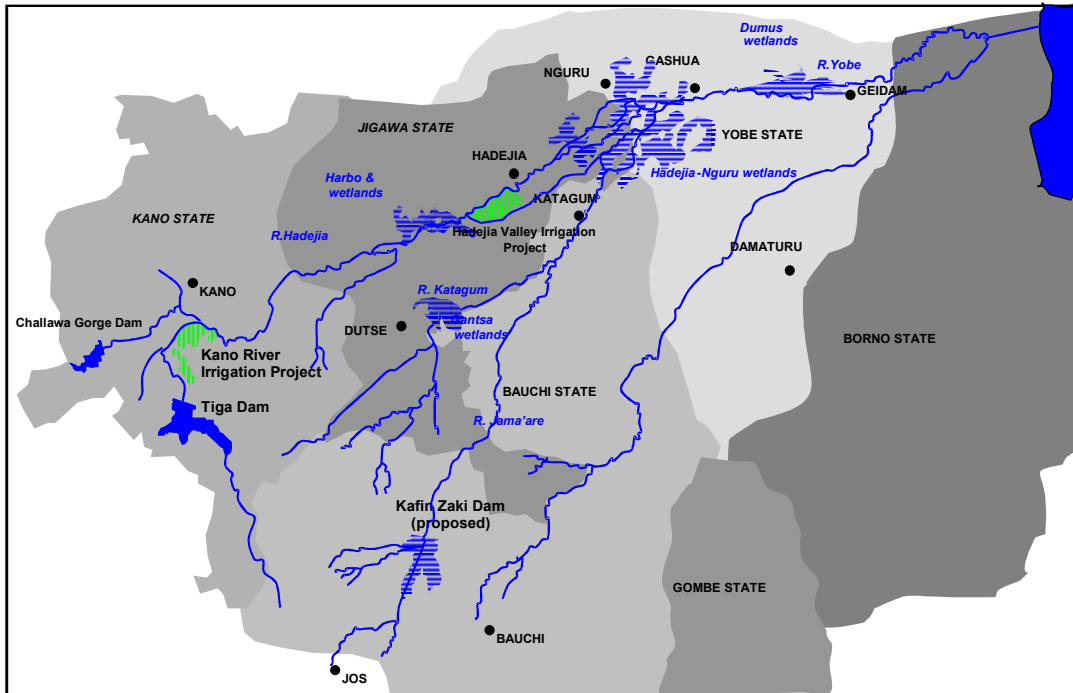


Figure 1: The Hadejia–Jama’are KomaduguYobe Basin

## The Problems of the Basin

### Physical problems

Since the early 1970s when the Tiga dam was completed (Figure 1), the period allowed for the reservoir to fill coincided with drought and attendant low rainfall, resulting in low flows in many rivers downstream. Due to the low and slow flow of water in the rivers after the dams, sand and silt deposits started to accumulate, particularly in the Hadejia river and many of its tributaries, thereby blocking and reducing their capacity. The closure of the second dam, the Challawa Gorge, in 1992 exacerbated the problem by further slowing down and reducing flows of downstream rivers and enhancing the deposition of sand and silt in the rivers. At the moment, three rivers (Kafin Hausa, Old Hadejia and Burum Gana) of the four tributaries of the Hadejia river are silted up (see Figure 3). Only the Marma channel now carries all the discharges from the Hadejia river into the non-returning Nguru lake.

Furthermore, the high turbidity of the Challawa river, coupled with the elevated position of the intake structures of the Kano City Water Supply (KCWS), have caused silt to build up at the mouths of the intake structures for supplying domestic water to the large city of Kano. This means that more water has to be released from the dams in order to fill up the sumps and lagoons at these intakes. Unfortunately, only about 5% of these releases are used by the KCWS. The remaining 95% is released downstream. This obscures the traditional seasonal flow patterns of the Hadejia river, making it perennial and hence further aggravating the problem of siltation, weed (typha) infestation and blockages.

Excessive flooding and typha grass infestation have in the last few years taken over part of the Marma channel and the Nguru lake. In the last two years, some of the excess flooding from the lake is moving northwest wards and back-flowing into the Marma channel in a cyclic regime. This ‘confused’ behaviour of the river has resulted in various unilateral (mostly short-term) intervention measures such as the creation of several offtake channels and closure of waterways by local farmers to mitigate the effects of flood and desiccation. The

consequences of these have been loss of farmlands, fish, and grazing land etc, leading to migration and increased poverty in the basin (JEWEL, 2003). Recent studies indicate that the level or gravity of poverty in the wetlands has increased about ten-fold in the last five years. Further, downstream of the basin, the story is the same. The irregular or low flow of the Yobe has affected the over 10,000 ha of small and large-scale irrigation schemes already developed, many of which are now abandoned.

### **Institutional Problems**

There are currently about six governmental organisations (the Federal Ministry of Water Resources and the State Ministries of Water Resources in the five states of Kano, Jigawa, Bauchi, Yobe and Borno) and one non-governmental organization (The North East Arid Zone Development Programme (NEAZDP) concerned with the management of the water resources of the basin. The Federal Ministry of Water Resources, which is the apex organ of government in the Nigerian water sector, empowered by Decree 101 of 1993 to be responsible for policy formulation and coordination for water resources development in Nigeria, has been managing the water resources of the HJKYB through the two River Basin Development Authorities (RBDAs) in the basin; the Hadejia-Jama'are River Basin Development Authority (HJRBDA) and the Chad Basin Development Authority (CBDA). There is also a coordinating committee supported by a Technical Advisory Committee (TAC) on the HJKYB in the Federal Ministry of Water Resources. This committee was set up by the National Council on water resources to coordinate the management and use of water in the basin. Unfortunately, due to underfunding of the RBDAs and coordinating committees, their influence in managing the water resources in the basin has been minimal.

Due to the increased water resource use problems in the basin, many government and international initiatives concerned with the management and use of water in the basin have been established during the last 20 years, particularly in downstream wetlands. These, among others, include the World Bank Agricultural Development Projects (ADPs) in the early 1980s, National Fadama Development Programme (NFDPP) phase 1 in the 1990s, River Basin Development Authorities (RBDAs), Hadejia-Nguru Wetlands Conservation Project (HNWCP), North East Arid Zone Development Programme (NEAZDP) and more recently, the DFID-JWL project, IUCN/Water and Nature Initiative (WANI) and Lake Chad Basin Commission/GEF projects. This is in addition to others involved in water use in the basin already in existence which include federal government ministries and departments such as the Federal Ministry of Agriculture (through its various departments like the (National Livestock Development Programme (NLDP) and Department of Fisheries), state government ministries of water resources and ministries of agriculture, local government councils and communities.

Unfortunately, although all these initiatives are striving towards the better use and management of water resources in the basin, there has, until recently, been a lack of coordination among the various organisations with a remit to manage or control access to water, even among major players such as the RBDAs. The jurisdiction of the two RBDAs in the basin were based on political rather than natural boundaries. This means that the HJRBDA covers the basin in only Kano, Bauchi and Jigawa states while the CBDA covers Yobe and Borno states. This arrangement makes it difficult for either of the two RBDAs to effectively manage the water resources of the whole basin.

The RBDAs also suffers from the 'poacher-gamekeeper' problem in their operations; i.e. while the RBDAs are supposed to regulate the use of water in the basin, they are themselves users of the resource. In such a case, they are likely to allocate more water for their own use and be less concerned with the needs of other users.

There are also problems related to missing and non-functional hydrological data collection infrastructure, and a defactor system whereby the planning and operation of water installations and structures in the basin can occur in the absence of hydrological data; i.e. no data is collected or demanded. The upstream dams lack adequate operational information and are (in most cases) operated based on the “rule-of-the-thumb”. Hence, the combined effects of the physical problems and institutional weaknesses together with poor funding of many of the regulatory organisations lead to poor management of water in the basin.

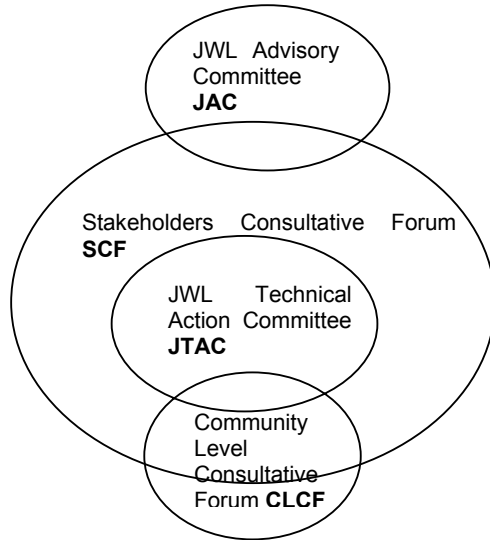
### **The Stakeholders’ Forum**

The Stakeholders’ consultative forum, which comprises over 60 representatives drawn from mainly government organisations, community representatives and community based non-governmental organisations across the entire basin, has been in existence since early 1990s. During most of its early life it was supported by the IUCN-managed Hadejia-Nguru Wetlands Conservation Project (HNWCP). It became inactive with the closure of the HNWCP in 1998. This was mainly because the forum was not institutionalised and hence no budget has been allocated by any statutory organization for its activities. The forum was, however, reactivated in December 2002 by the DFID-JWL project with the aim of facilitating the forum to set up an independent mechanism (i.e. an arrangement whereby the stakeholders will contribute towards financing the activities of the forum) for addressing resources management and use issues in the basin. It is hoped that with this new arrangement of stakeholder contributions, the forum is intended to be more self-sustaining this time around.

During the last two years, a section of the forum, made up mainly of technocrats from Nigerian State Ministries of Agriculture, Water Resources and Environment, have been engaged in three capacity building/baseline data collection workshops aimed at further understanding the Common Pool Resources (CPR) situation, conflict management issues as well as the relationships between organisations responsible for the use and management of these resources in the basin. The forum has also been subdivided into three smaller committees in order to facilitate its work with the JWL project. The rationale for such subdivision, in addition to the fact that more meaningful discussions and results are better achieved with smaller groups, particularly of the same or similar disposition and understanding of the issues, is that it also provides the opportunity for stakeholders from the various state governments across the basin to meet and discuss natural resource issues in the basin. These sub-committees are the JWL Advisory Committee (JAC), made up of 18 members, mainly top level government officers at state and federal ministries of Agriculture, Water Resources and Environment. These are officers in the position of Permanent Secretaries and managing directors in their respective organizations. They are the accounting officers and have the responsibility of advising decision-makers and politicians on issues relating to their respective organizations. This group, described as ‘capable of breaking stone walls’ to reach higher level decision-makers is the link between the technocrats and the decision-makers. The second, smaller committee is the Technical Action Committee (JTAC). JTAC is made up of 24 members, mainly directors in ministries of agriculture, water resources and environment and agencies (such as State Water Boards) from riparian states ministries. These are the technocrats who are mainly directly involved in the preparation and implementation of projects. Their role is mostly advisory to the higher level JAC. The last, smallest committee is the Community Level Consultative Forum (CLCF). It is mainly made up of community representatives and local government officers within the wetlands. This is the group whose members’ livelihoods depend directly on the natural resources of the basin. Over 80 communities and about sixteen local government councils are represented in this forum. Also women’s groups, pastoralists and floodplain farmers (*fadama*) and other resource users are represented in the forum. The different sub-committees have gone through a series of capacity-building trainings in PRA techniques, Integrated Water Resources Management (IWRM), Satellite image interpretation etc. in the last year.

A schematic representation of the relationships between the Stakeholders Consultative Forum (SCF) with all the sub-divisions of the forum is presented in Figure 2.

**Figure 2:** Schematic Presentation of the Stakeholders Consultative Forum of the HJKYB with the various sub-committees and how they relate to each other.



### The DFID-JWL Project

The Joint Wetlands Livelihoods (JWL) Project, which is supported by the United Kingdom Department for International Development (DFID), has been designed to address poverty by improving the livelihoods of poor people who depend heavily on CPRs in the HNWs. It is doing this mainly through improving water governance, as better water management has been agreed to be the single issue that will have the greatest impact on this diverse group of people.

Specifically, the project is concerned with demonstrating processes that will help to improve the management of common pool resources in the HNWs in particular – falling within Bauchi, Jigawa and Yobe States – and the Hadejia Jama'are Komadugu-Yobe Basin (HJKYB) in general, – covering parts of Borno and Kano states in addition to the above mentioned states – (see Figure 1) as a means of reducing poverty.

In attempting to do this, the DFID-JWL Project has brought together key stakeholders to form platforms or fora such as the various stakeholders' committees for developing and implementing strategies to overcome CPR management problems. This is being pursued at three levels, i.e. basin, wetlands and community, but as an integrated programme. To facilitate the work of the platforms, the project is promoting improvements in information generation and exchange, mechanisms for communication flow, coordination of activities between the key stakeholders and execution of pilot projects that demonstrate best practice and influence policy. The DFID-JWL project is also working closely with other initiatives in the basin in order to achieve the above outputs. These include initiatives such as GEF/IUCN/FMWR's Water and Nature Initiative Project (WANI) on implementing water governance and water audit for the HJKY Basin; GEF/LCBC's project on developing Integrated Wetlands Management for the HJKY Basin; and WB/ADB/FGN/Fadama 2 (NFDP II) Programme on

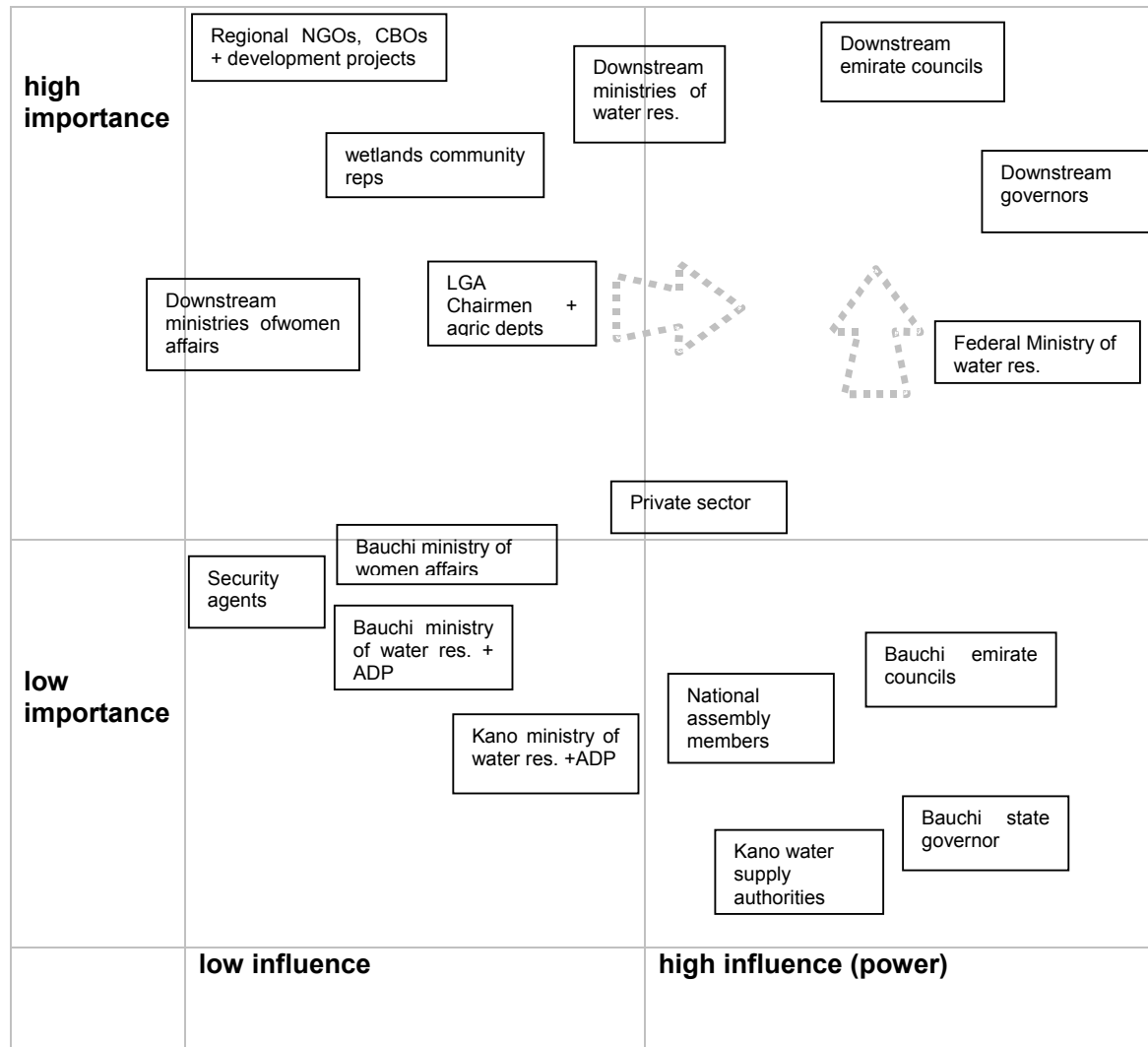
assisting small scale irrigation farmers with loans and technical assistance to develop *fadama* lands in the basin.

### **Reaching Consensus**

As earlier stated in the last two years stakeholders have reached consensus over a number of issues relating to the water resources and other Common Pool Resources management in the basin. This was achieved through meetings and three separate training and capacity building workshops on institutional rights and responsibilities; access rights and conflict management; and environment, poverty and livelihoods issues in the HJKY basin. In January 2003, it was identified and agreed by all stakeholders that: (1) there is poor coordination between institutions who have the statutory responsibilities for managing water resources in the HJKY basin, (2) there are gaps and overlaps in the responsibilities of these institutions and (3) there is a need for capacity strengthening of stakeholders in order to improve coordination among them. In February 2003, the stakeholders agreed and reached a common understanding on types and frequency of conflict that exist between the various resource users of CPRs. In May 2003, consensus was reached on the fact that water is the most important resource in the basin, upon which all other CPRs are dependent, and the need to concentrate efforts towards solving the water problem was paramount.

Earlier, a stakeholders' analysis was conducted to identify which stakeholders are key to the use and management of water in the basin. An abridged result of the analysis is presented in a matrix in Figure 4. The results revealed the disposition of all the stakeholders in the basin based on their influence and importance in water management. The most critically important observation is that there is need to work on stakeholders who are very important but lack influence and those who are very influential but do not seem to regard water management in the basin as an important issue. In other words, there is a need to encourage/facilitate movement of stakeholders from the top left hand corner of the box in Figure 4 to the top right hand corner and from the bottom right hand corner to the top right hand corner as indicated by the dotted arrows. It was at the end of these exercises that a workplan for the various levels of stakeholder involvements was drawn up.

**Figure 4: Stakeholder importance/influence matrix**



At the basin level, it was agreed that involving highly influential stakeholders, advocating for Integrated Water Resources Management (IWRM) and helping to develop rational dam operation procedures for upstream dams that reflect and respond to the needs of all downstream users were to be promoted. These are long-term interventions and require work concentrated more heavily at federal level. Consensus was also reached that, where necessary, needed interventions will be backed by studies that will help to provide additional information and/or added impetus to the intended interventions. As described earlier, the JWL Advisory Committee (JAC), due to its status, will be the right group for implementing interventions at this level.

At the wetlands level, consensus was reached to construct a flow diversion structure at one of the bifurcations of the Hadejia near Likori village (see Figure 3) as a medium term measure to enable regulation of the river flow between the Marma channel, which has excess flow, and Burum Gana, which suffers from low flows. This would be combined with channel clearance work on the Burum Gana. This initiative is also expected to set the stage for control of typha grass and to arrest potash intrusion on the Marma channel. Such a structure is eventually to be replicated at the other two bifurcations upstream (at Miga for the Kafin Hausa river - and at Magujin Idi for the Old Hadejia river). This is expected to enhance the



flow of water in these rivers and also to River Yobe and Lake Chad in the downstream. Consensus was also reached on the need to carry out studies (such as EIAs, CBAs, channel profiling etc) that will have direct influence on the design and operation of the flow diversion structures and the channel clearance work. Considering the fact that intervention at this level will involve a lot of technical knowledge and capability, interventions at these levels will be well handled by the Technical Action Committee (JTAC).

At the community level, consensus was reached on the clearing of weeds and silt from the Burum Gana Channel (as a short term solution) to improve flow in the river. This would also have the effect of reducing excess floods in the Marma channel, thus enabling better management of the typha grass infestation. At this level, such consensus was reached following a series of inter-village exchange visits and two summit meetings held to assure about 60 of the critically affected communities along these rivers that they do collectively possess the capacity to address the problem. It was at these summit meetings that community representatives were elected and action plans were agreed. This started in February 2004, after initial consultations with some champions such as traditional rulers from the area in January 2004.

### **Taking Action**

In order to address the issues upon which consensus has been reached, the stakeholders, with the assistance of the JWL project, have developed several intervention measures at the different levels of stakeholder engagements in the HJKY basin. Some of these are as follows:

#### **Interventions at Basin Level**

Most of the interventions at this level have been advocacy-related. In the initial stakeholders' analysis described in Section 3, stakeholders who have influence and are considered to be important in water management in the basin but do not possess the right information to simulate changes are consulted, provided with information and encouraged to act towards addressing the problems of the basin. These interventions specifically resulted in visits (by the JAC members) to Emirs, riparian State Governors, Ministers of Environment and of Water Resources. Other important stakeholders such as policy-makers in the Senate and in the Houses of Representatives and various states assemblies within the basin are also being targeted. Based on these visits, debate has already begun on the issue at the House of Representatives, while a bill has already been signed in one of the states' (Yobe State) House of Assembly on the problems of the basin. In addition to visits to engage more influential stakeholders, some studies on the concept of Integrated Water Resources Management (IWRM) in the basin and the status of bulk water intakes such as the Kano City Water Supply (KCWS) raw water intake structures were also done.

#### **Interventions at Wetlands Level**

At wetlands level, interventions are mainly working towards influencing the various riparian state governments to provide funds for the construction of the pilot flow diversion structure at the Likori bifurcation and dredging of the Burum Gana channel, as well as to replicate similar structures at the other two upstream bifurcations and dredging work in the Old Hadejia and Kafin Hausa rivers.

In order to support the pilot diversion structures and channel clearance work this level of intervention has engaged stakeholders (mainly the JTAC members) in capacity-building training in IWRM, hydrological baseline data collection, river profiling and satellite image interpretations. A result of the IWRM capacity building has been the formation of IWRM committees in the riparian states and the development of an action plan for the wetlands level stakeholders.

Another intervention at this level (by JTAC members) is an advocacy/awareness campaign in all the riparian states to put in place an integrated water resources management plan in the basin. It is considered that the successful achievement of the goal of IWRM for the basin should ultimately lead to the resolution of the current problems. In turn, this will result in enhanced livelihoods for the population of the basin, particularly the poor who rely on common pool resources of the basin such as water.

### **Interventions at the Community Level**

From April to June 2004, the community leaders were able to mobilise enough communal labour and excavators from the government agencies responsible to clear 25 kilometres of typha grass and other aquatic vegetation that had blocked flows at the bifurcation of the two channels and further along the Burum Gana. As a result of this, about 1,000 hectares of land that have been lying dormant for the past seven years are now under dry season cropping, and more will be put under cultivation as flow is assured. Fishermen and farmers who had migrated from the area are now returning. There is also more commitment to take on bigger challenges by more communities and other stakeholders; for example the clearance of two other blocked channels.

The pilot clearance exercise also served as a demonstration of best practices in terms of catalysing joint action across tiers of government and across sectors that can influence policy. It also served as a practical capacity-building experience for community leaders, as they were empowered by the process to articulate their demands for service provision from responsible agencies.

### **Conclusions**

This paper has provided brief information on the experiences over the first two years of operation of the DFID-JWL project and the stakeholders' forum of the HJKYB in reaching consensus over issues relating to water management in the basin. Most of the interventions undertaken by the stakeholders are, until now, only a start to solving the problems. However, the process mapped out for tackling the issues and problems is sustaining and will assist the stakeholders to continue after the DFID-JWL project. The key lesson to date is that a development project of this nature cannot and should not try to manage national public goods, but can be effective in building coalitions of interest around shared problems and then helping to catalyse collective action through both field level pilots and policy level advocacy. However, it is necessary to ensure that consensus on the nature of a problem is reached by the widest possible range of stakeholders before trying to promote the solutions to such problems.

Another lesson is that the attitudes and disposition of technical level decision-makers can easily and greatly be changed with little exposure to the issues and problems which these decision-makers are responsible for managing.

A further lesson is that people whose livelihoods are directly affected by the problem are most supportive of any development project which attempts to solve these problems and are hence easy to mobilize, as demonstrated by the engagement of the community level stakeholders in the HJKY Basin. Projects of this nature should therefore exploit this opportunity as a strategy for implementing similar projects.

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Figure 3: The Hadejia-Nguru Wetlands showing the three major bifurcations of the Hadejia river and locations of stakeholders efforts in channel clearance

