

Reform of the Irrigation Sector and Creation of Functional and Sustainable Irrigation Water Users Associations (AUEI) in Niger: Capitalization of the Experience of the Konni AHA

Saidou Abdoukarimou¹, Illou Mahamadou²

¹Faculty of Agricultural Sciences, Boubacar Bâ University of Tillabéri, Tillabéri, Niger

²Faculty of Letters and Human Sciences, André Salifou University of Zinder, Zinder, Niger

Email: saidoul01@yahoo.fr, illou.mahamadou@gmail.com

How to cite this paper: Abdoukarimou, S. and Mahamadou, I. (2024) Reform of the Irrigation Sector and Creation of Functional and Sustainable Irrigation Water Users Associations (AUEI) in Niger: Capitalization of the Experience of the Konni AHA. *Agricultural Sciences*, 15, 209-229.

<https://doi.org/10.4236/as.2024.152012>

Received: January 9, 2024

Accepted: January 28, 2024

Published: January 31, 2024

Copyright © 2024 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

During the 1980s, as part of a policy of liberalization, following budgetary cuts linked to the implementation of structural adjustment programs, management responsibilities for AHAs were transferred from ONAHA to cooperatives concerned. Due to lack of financial resources, but also because of poor management, everywhere in Niger we are witnessing an accelerated deterioration of the irrigation infrastructure of hydro-agricultural developments. Institutional studies carried out on this situation led the State of Niger to initiate a reform of the governance of hydro-agricultural developments, by strengthening the status of ONAHA, by creating an Association of Irrigation Water Users (AUEI) and by restructuring the old cooperatives. Indeed, this research aims to analyze the creation of functional and sustainable Irrigation Water User Associations (AUEI) in Niger in a context of reform of the irrigation sector, and based on the experience of the Konni AHA. It is based on a methodological approach which takes into account documentary research and the collection of data from 115 farmers, selected by reasoned choice and directly concerned by the management of the irrigated area. The data collected was analyzed and the results were analyzed using the systemic approach and the diagnostic process. The results show that the main mission of the AUEI is to ensure better management of water, hydraulic equipment and infrastructure on the hydro-agricultural developments of Konni. The creation of the Konni AUEI was possible thanks to massive support from the populations and authorities in the implementation process. After its establishment, the AUEI experienced a certain lethargy for some time due to the rehabilitation

work of the AHA but currently it is functional and operational in terms of associative life and governance. Thus, the constraints linked to the legal system, the delay in the completion of the work, the uncertainties of access to irrigation water but also the problems linked to the change in mentality of certain ONAHA agents constitute the challenges that must be resolved in the short term for the operationalization of the Konni AUEI.

Keywords

Konni (Niger), Hydro-Agricultural Developments, Association of Irrigation Water Users, Governance

1. Introduction

To fight against the famines that the populations were facing in the early 1970s, the State of Niger began the construction of irrigated areas along the river valley and inside the fossil valleys like the Maggia. This is how the hydro-agricultural development of Konni was carried out from 1976 to guarantee the food security of the local populations.

Like other countries in the Sahel, Niger has been confronted in recent decades with the negative effects of climate change, the manifestations of which are observed through great interannual variability in rainfall which results in dry years which have become increasingly frequent occurrences causing accelerated environmental degradation. These climate changes have negatively impacted the productivity of the Konni irrigated area [1]. The scarcity of water and the deterioration of infrastructure and irrigation equipment have drastically reduced the cultivated areas on the perimeter. To remedy the deterioration of Niger's hydro-agricultural developments, the State has initiated a new reform of their management.

In Niger, the management of hydro-agricultural developments has experienced many vicissitudes, leading the State to initiate reforms. In connection with national and international contexts and circumstances, the management of Niger's hydro-agricultural developments has been the subject of several reforms, the most important of which are three: decentralized management, the transfer of management to cooperatives and Co-management of hydro-agricultural developments by ONAHA and cooperative organizations.

Over the period from 1962 until the beginning of the 1980s, the management of hydro-agricultural developments was ensured by state structures. The Nigerien Credit and Cooperative Union (UNCC) was created in 1962 and had the mission of managing hydro-agricultural developments carried out by the State. It was structured around 2 sections: the cooperative section responsible for organizing producers and the agricultural credit section which had to finance the rural world.

Despite the good results obtained in the area of rice production, the management of irrigated areas was much less so. The State considered the role played by the UNCC in the irrigation sector to be insufficient due to its powers being too broad and not sufficiently meeting the specific requirements required by an irrigation system. This is how the National Office for Hydro-Agricultural Developments (ONAHA) was therefore created in 1978 as a decentralized parapublic body entirely intended for the implementation of the Niger government's irrigation policy. During this period, the management of developments was highly centralized and subsidized by the State with the support of technical and financial partners.

With the oil shock of the 1970s and the international economic crisis, no longer having enough resources to support hydro-agricultural developments, the State is part of a dynamic of progressive disengagement. The signing of a structural adjustment program (SAP) with the World Bank and the IMF leads the State of Niger to transfer the management of developments to cooperative organizations. We are witnessing the advent of a second period of reform which will last more than thirty years during which the cooperatives took complete control of the management of the developments. Production activities, marketing of agricultural products, supply of agricultural inputs, water management of irrigation infrastructure were carried out by cooperative organizations.

Certainly, undeniable efforts have been made in the area of appropriation of crop calendars and production techniques and in terms of increasing yields, but the situation remains unsatisfactory in the area of water and land management, hydraulic equipment and infrastructure [2]. Over the years, new constraints appear: poor management of financial resources, decline in yields and agricultural production, deterioration of irrigation equipment and infrastructure, exacerbation of conflicts linked to access to irrigation water, etc. All these constraints jeopardize the sustainability of the developments. This situation leads the State of Niger to initiate a third reform in the management of hydro-agricultural developments.

From 2014, a new reform of hydro-agricultural developments has been implemented. It partially puts an end to the system of self-management of irrigated areas by cooperatives which has existed for 30 years to move towards co-management with ONAHA whose action is now reinforced. This reform thus enshrines a clear distinction between the activities of water management and infrastructure of developments henceforth assumed by the associations of irrigation water users (AUEI) and the other functions of production, marketing, supplies agricultural inputs which will continue to be provided by cooperatives.

For each hydro-agricultural development in Niger, the State has created an AUEI whose mission is the long-term, professional and autonomous management of water and irrigation equipment and infrastructure. A renewable 10-year operating contract is signed by ONAHA and AUEI. Through this contract, the State ONAHA subdelegates to the AUEI the day-to-day management of water,

the maintenance and renewal of irrigation equipment and infrastructure.

The State of Niger sought and obtained the support of external partners including the Millennium Challenge Corporation which supported it in the rehabilitation of the Konni perimeter and in the implementation of the reform aimed at rationalizing the roles and responsibilities between the ONAHA and producer organizations, the separation of functions between AUEIs and cooperatives and the establishment of an AUEI. These findings lead us to ask the question: what are the procedures for creating functional and sustainable Irrigation Water User Associations (AUEI) in Niger in the context of reform of the irrigation sector? To answer this, this research aims to analyze the creation of functional and sustainable Irrigation Water User Associations (AUEI) in Niger in a context of reform of the irrigation sector, and based on the Konni AHA experience. If it succeeds, the Konni experience should constitute the new flagship model of governance for the other AHAs in Niger, with the empowerment of operators and the creation of functional and sustainable Irrigation Water Users Associations (AUEI).

2. Presentation of the Study Framework

Niger is a country located in West Africa, largely desert, since 2/3 of its surface area (1,267,000 km²) is located in the Saharan zone. The geo-climatic and edaphic characteristics do not allow the establishment of intensive agriculture, the Nigerien authorities opted very early, since independence in 1960, for the valorization of the country's water resources and the development of agriculture, irrigated in order to promote food self-sufficiency of the population. This explains the existence of the Konni irrigated area (**Figure 1**).

The Konni perimeter was carried out in two periods: 1972-1976 and 1982-1984 (extension phase). The theoretical area initially was 2452 ha with a possibility of development in the dry season of 1200 ha. The lifespan of the structure was estimated at its design at 100 years, the current rehabilitation takes place 30 years after construction. This is partly due to poor management of the perimeter and a lack of infrastructure maintenance. The Konni AHA is of the gravity type with a system in two main parts (**Figure 2**):

- The water mobilization and transfer zone made up of two (2) dams including Mozagué with an initial volume of 30 million m³ and Zongo of 12 million m³. These two dams are linked to the Tchérassa buffer reserve with a volume of 2.5 million m³ initially and 1.4 to 1.5 million m³ today, by a large supply canal of 15 km, then the main canal carries water to the service area at Konni further downstream;
- The service area, for its part, is made up of four (4) main canals A-B-C and D, 23 secondary canals and tertiary canals with a plot unit of 0.75 ha.

The population of Konni is predominantly rural, characterized by a strong youth potential implying a great demand for various social services: employment, health, leisure, education, protection, etc. The main economic activities

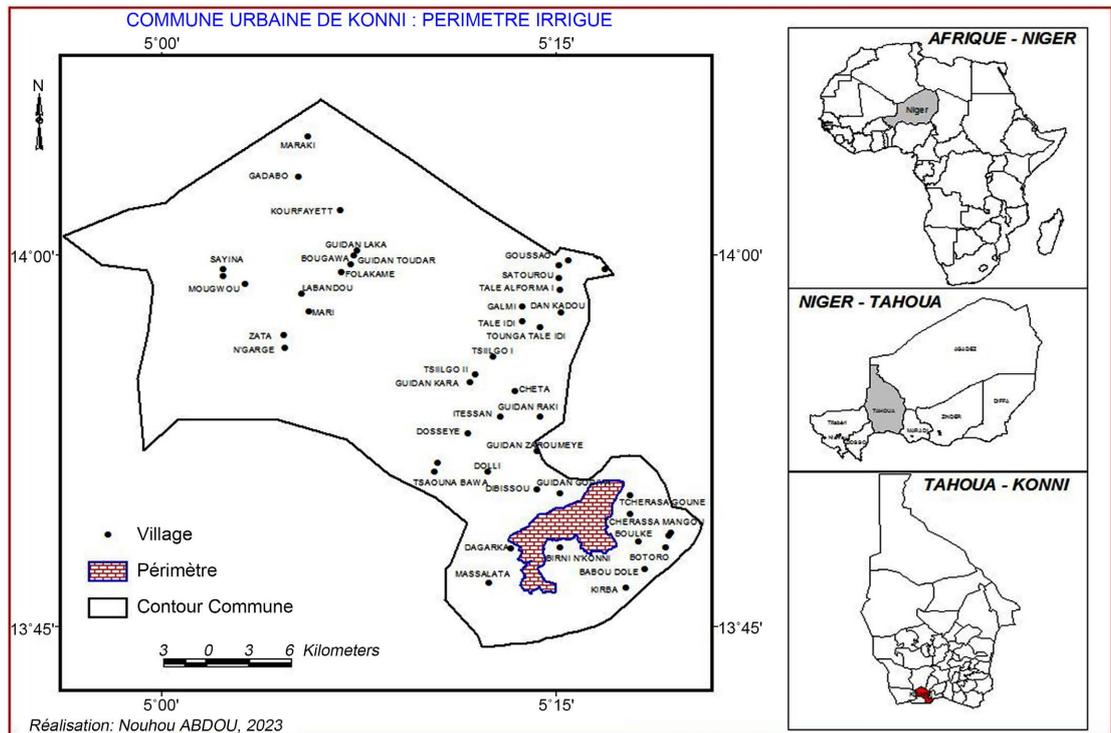


Figure 1. Location of the study area (urban commune of Konni and the irrigated area). Source: Republic of Niger, 2018, p. 38.

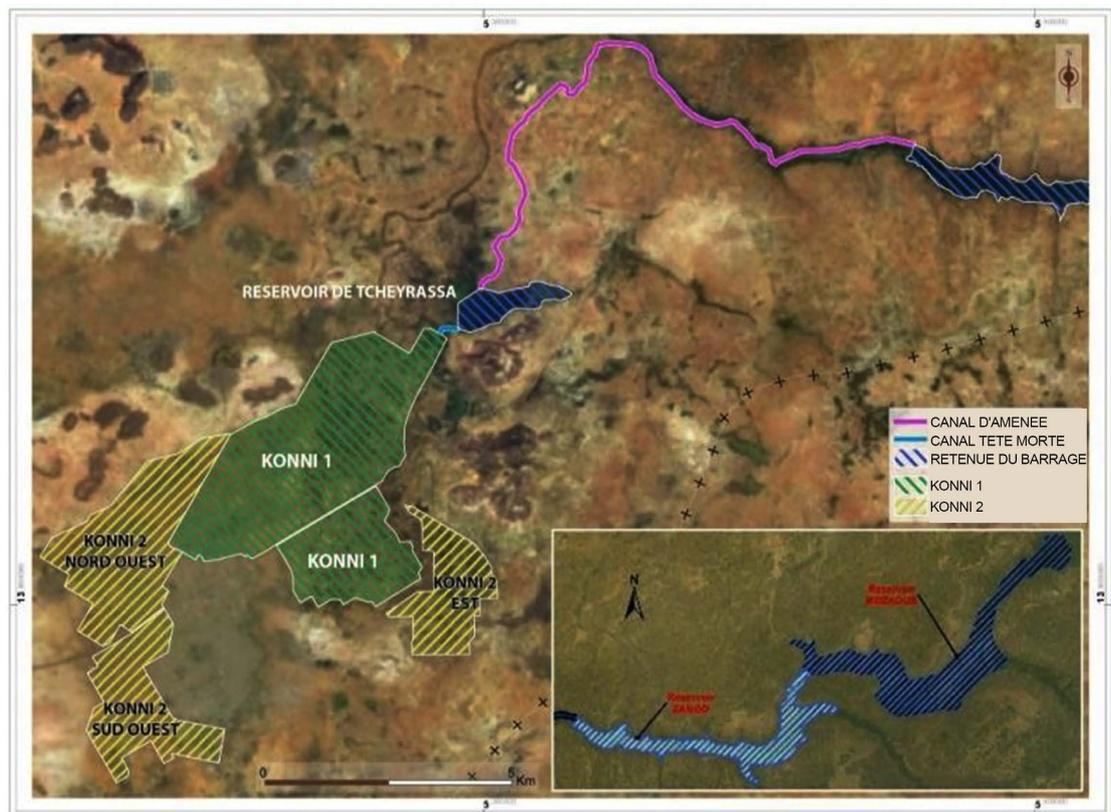


Figure 2. Location of the perimeter and its infrastructure. Source: Republic of Niger, 2018, p. 8.

practiced by the populations are agriculture, livestock, fishing and trade. But there are also crafts, industry and services. Agriculture is both rainfed and irrigated. When the AHA was created, production was done in two seasons: in the wet season where cereal crops dominate (millet, sorghum, corn, cowpeas) and in the dry season with cash crops (onion, cabbage) as the main crops., tomato, anise etc.). The choice of speculations is changing in particular due to the lack of water on part of the perimeter in the dry season. The Konni perimeter tries to produce crops such as anise in the dry season which are profitable and consume little water. The proximity of Nigeria also makes it possible to sell specific crops such as anise.

Livestock breeding is of three types: agro-pastoralism, sedentary breeding and peasant fattening mainly carried out by women. Fishing is carried out at dams (Mozagué and Zongo Nadabar) and ponds (Tchérasa Gouné, Dossey, Fola-kam).

As a reminder, following the adoption of the texts of the reform of development management and ONAHA, as part of the implementation of the Compact-Niger program, the Millennium Challenge Corporation (MCC) and the State of Niger signed a partnership financing agreement providing for the investment of 437 million dollars, or nearly 250 billion CFA Francs, over five years in an ambitious development program aimed at increasing agricultural productivity and the quality of life of the Nigerien populations.

The projects financed by the Niger Compact which intervene in the AHA of Konni are:

- The Konni AHA rehabilitation project carried out by the Camacho company;
- The project to support the agricultural support service implemented by Cabinet Cowater. The mission of this project is to support the creation and operationalization of the new Konni cooperative society;
- The land security project executed by the MSA firm;
- And the Sustainable Management of the Irrigation System (GDSI) project entrusted to the Compagnie d'Aménagement des Coteaux de Gascogne (CACG).
- The GDSI project which concerns this article has a double objective:
- Create an operational, efficient, sustainable and autonomous association of irrigation water users (AUEI) on the Konni AHA;
- Strengthen the capacities of ONAHA in these new functions.

The GDSI project began its mission in October 2019 with a diagnosis and planning phase which made it possible to take stock of the Konni AHA, then to plan the stages of the implementation of the AUEI. After having developed and implemented an adapted communication strategy with producers, the process of creating the Konni AUEI took place. An intensive training program for producers and their managers which is made up of 28 modules was developed and implemented.

AUEI leaders also benefited from study trips to Saint Louis in Senegal and

Tarbes in the South of France. These trips allowed them to exchange and capitalize on the good practices of Senegalese and French actors involved in the management of water and irrigation infrastructure.

3. Data and Methods

The research is qualitative in nature based on the perceptions of the actors and focused on the different stakeholders involved in the establishment and operation of the AUEI of Konni. The research is qualitative because at this stage of the reform, the emphasis is placed on changes in mentalities, on observable practices and operating methods rather than on quantitative aspects. The data used in this research are those collected during documentary research and field surveys on the Konni irrigated area. The development of a reading sheet made it possible to collect information from the abundant existing documentation on the reform of the governance of AHAs and the creation of AUEIs in Niger.

The field work took place in the following localities: Konni, Dagarka, Massalata, Boulké, Mounwadata, Mozagué, Tchérassa, Tsernaoua. The key actors on which this research was based are: the municipal authorities of Konni and Tsernaoua; technical services; ONAHA agents (Branch Manager, Area Director); the managers and staff of the two old cooperatives, the leaders of the Adaltchi union of cooperatives, the managers of the GMP, the cantonal chief of Konni, the leaders of the AUEI and the new cooperative society, the operators (men, women and young people), permanent secretaries of land commissions (departmental, municipal), and non-development operators. The stakeholders were questioned about the process of setting up the Konni AUEI, and its operational functioning since its creation.

Direct observation and interview are the two field data collection techniques adopted. The structured individual interviews involved the administration of questionnaires to operators and stakeholders concerned by the management of the development to understand the functioning and governance mode of the association. The approach consisted of collecting data from questionnaires which were administered to different groups of stakeholders in the Konni perimeter area. Five types of questionnaires (operators, operator managers, authorities, technical services, civil society) were developed and administered to these stakeholders. Seven focus groups composed of women, men and young people were organized in the 7 villages chosen to conduct the study. In total, 115 people (farmers, traditional chiefs, local elected officials, leaders of cooperations and associations, managers technical services, ONAHA agents, etc.) were interviewed in the districts of Konni and surrounding villages. Made randomly, the choice of people interviewed was guided by the following criteria: demographic weight of the village, national of a village or district which operates the area, being from a structure which is involved in the management of the planning, member of a local civil society organization. The perceptions of local stakeholders (operators, authorities, technicians) were evaluated on the basis of their vision of the reform.

The perception evaluation grid provides four categories: those who are optimistic for the success of the reform, Those who are skeptical who consider that it is just another reform, those who are indifferent and those who are against reform.

4. Results and Analysis

4.1. Conceptual Frame

4.1.1. Legal and Institutional Framework of the AUEI of Konni

The National Office of Hydro-Agricultural Developments (ONAHA), was created by order No. 78-39/PCMS/MDR dated December 28, 1978 to serve as a privileged tool for the implementation of the water policy. State in the field of development, modernization and intensification of irrigated agriculture in Niger. It has the form of a Public Establishment of an Industrial and Commercial Character (EPIC), endowed with legal personality and financial autonomy. Among the missions assigned to it are, among others, the realization of irrigation schemes and/or rural development on behalf of the State and local authorities.

- ONAHA is placed under the supervision of the Ministry of Agriculture which implements the government's policy on the development of irrigated agriculture. Within the Ministry, it collaborates closely with the Directorate of Cooperative Action and the Promotion of Rural Organizations (DAC/POR) which develops development strategies for all peasant organizations (except artisanal organizations) and cooperatives acting in the agricultural sector. To enable ONAHA to fully carry out its missions of developing irrigated agriculture in Niger and its efficient management, the State has initiated reforms. We can cite among others :
- Order No. 2014-01 of January 3, 2014, supplementing Order No. 78-39 of December 29, 1978 creating ONAHA;
- Decree No. 2015-354/PRN/MAG of July 10, 2015, modifying and supplementing decree 2015-218/PRN/MAG of April 18, 2015, approving the statutes of the National Hydro-Agricultural Development Office (ONAHA);
- Order No. 063/MAGEL/MH/A of September 29, 2016, specifying the terms of creation, missions, organization and operation of Associations of Irrigation Water Users (AUEI) of Hydro Developments-Agricultural;
- Order No. 064/MAG/EL/SG of September 29, 2016 approving the standard operating contract on the management of water and irrigation infrastructure and equipment on irrigated areas;
- Order No. 065/MAG/EL/SG of September 29, 2016 approving the standard operating contract on the agricultural development and exploitation of irrigated areas.
- These texts constitute the legal basis for the creation of an AUEI on each AHA and the formal transfer of responsibility for water management, operation and maintenance of the AHAs to the AUEIs. These are non-profit legal entities under public law with the automatic and compulsory participation of all holders of land use rights in the service area of the AHA in question.

- The main mission of the AUEI is to ensure better management of water, hydraulic equipment and infrastructure on hydro-agricultural developments in Niger.

4.1.2. Main Missions and Financial Resources of the AUEI of Konni

In accordance with the provisions of article 4 of decree 063/MAGEL/MH of September 29, 2016 and like all AUEIs in Niger, the missions of the AUEI of the AHA of Konni are as follows:

- ensure the day-to-day management of equipment and infrastructure enabling irrigation, drainage and flood protection;
- guarantee the provision of water equitably to its members;
- plan and execute upkeep and maintenance actions for irrigation infrastructure and equipment, drainage and flood protection;
- define and enforce by members the technical rules allowing rational, efficient and equitable use and distribution of water over time;
- set the amount and collect the hydraulic fee from members;
- manage and distribute the resources of the fee between day-to-day operation, maintenance and provisions for equipment renewal;
- represent and defend the interests of members wherever necessary and in particular in the relationship with the State or its representative and with any entities having responsibilities in the field of agricultural production and marketing on the AHA;
- give its opinion on the investment operations that the State wishes to carry out on the AHA in strict compliance with the general interest of the members during these consultations.

To properly carry out these missions and play its role effectively, the financial resources of the AUEI are made up of:

- ✓ the hydraulic royalty paid by its members;
- ✓ annual membership fees;
- ✓ resources generated by the sale of membership cards;
- ✓ interest charged on late payments from members;
- ✓ interest on AUEI savings accounts;
- ✓ fines or other financial sanctions paid by its members;
- ✓ donations and legacies;
- ✓ payment for services rendered by the AUEI;
- ✓ public subsidies.

4.1.3. Organs and Functioning of the AUEI of Konni

As defined by decree 063/MAGEL/MH of September 29, 2016, the mandatory bodies of the AUEI are:

- The General Assembly (deliberative body): it is the supreme decision-making body of the AUEI. It meets twice a year to decide on directions and decisions;
- The Management Committee (executive body): responsible for implementing

the decisions of the general assembly. The Management Committee is responsible for the management of the AUEI and reports to the general assembly;

- The Control Committee (control body): is responsible for controlling, on the basis of regular inspections, the state of hydraulic works and hydromechanical equipment operated by the AUEI and notifying the Management Committee of necessary maintenance interventions. It also verifies the accounts of the AUEI by carrying out audits.

However, other bodies necessary for the proper functioning of the AUEI may be set up. In the case of Konni, the members of the ad hoc committee who prepared the statutory and regulatory texts opted for the creation of a dispute resolution committee whose main mission is to prevent and manage conflicts between operators and between operators of other users of irrigation water (breeders, farmers outside the perimeters, gardeners, etc.). The composition and missions of these bodies have been defined in the statutes and internal regulations of the AUEI.

In addition, the AUEI may recruit full-time, part-time or seasonal salaried staff to enable it to assume its responsibilities within the limits of the budget approved by the General Assembly. For the Konni AUEI, the recruitment of an engineer-level manager and an accountant is planned. They will be supported by the water workers who are not permanent agents but only intervene during the development of the dry season. The recruitment of this staff was done on a competitive basis.

4.2. Process of Creation of the AUEI of the AHA of Konni

The creation of the AUEI of Konni takes place in a context of reform and in a multi-actor institutional environment with often divergent interests. The creation of the Konni AUEI was possible thanks to massive support from the populations and authorities in the implementation process. The process was carried out through several stages.

4.2.1. Awareness Phase

Several communication channels were used to reach practically all people affected by the projects (PAPs) and stakeholders: village public assemblies led by professional animators, fairground theater sessions in the 11 villages and 9 neighborhoods of Konni hosted by facilitators, and the organization of information workshops for cooperative leaders, administrative and customary authorities, municipal councilors and civil society actors. Private radio stations in Konni were also used to inform and raise awareness among the population. The success of the intensive information and awareness campaign among populations and authorities has made it possible to dispel fears, apprehensions and misunderstandings relating to the creation of the AUEI of Konni.

4.2.2. Minority Inclusion Process

Before the implementation of the reform, all developments were led by men and Konni is no exception. The intensive information and awareness campaign for PAPs and stakeholders placed particular emphasis on taking into account gender and social inclusion. Women, young people and vulnerable people were involved in the process of establishing the AUEI.

Before the establishment of the AUEI, no women were members of the governing bodies of cooperatives and Mutualist Producer Groups (GMP). The 119 leaders of the cooperative bodies were all men. However, thanks to the information and awareness campaign carried out in all the villages and neighborhoods of Konni, out of the 115 democratically elected delegates at the level of the hydraulic sectors, 37 elected are women. And following the elections held during the constitutive general assembly, a management committee composed of 12 members, 50% of whom are women, was set up. Thanks to the awareness-raising and mobilization work of women and young people, the AUEI bodies of Konni have 20 members, 45% of whom are women and 10% young people.

4.2.3. Choice of PAP Representatives from the Hydraulic Sectors

As a prelude to the elections of delegates and office members, preliminary work to delimit the hydraulic sectors was undertaken. The work consisted of following the secondary and tertiary canals to identify all the plots supplied by the same water source. In total, 23 hydraulic sectors were identified and delimited. Operators from each sector were identified and a nominative list was established. The bodies and positions are indicated in **Table 1**.

Table 1. Organs of the AUEI of Konni and positions to be filled.

Organs of the AUEI of Konni	Vacancies
General assembly	115 delegates A President A Vice President A Secretary General A Deputy Secretary General A General Treasurer
Management Committee	A Deputy General Treasurer A Secretary for Information and Awareness An Organization Secretary A Secretary responsible for the advancement of women A Secretary responsible for environmental issues Two Advisors
Control Committee	3 members
Dispute Resolution Committee	5 members

Source: GDSI/MCA activity report, March 2020 [3].

The votes organized at the level of the 23 hydraulic sectors resulted in the election of one hundred and fifteen (115) delegates including thirty-seven (37) women who constitute the general assembly of the AUEI of Konni. Thus, all these delegates were elected by consensus using the show of hands method.

4.2.4. Holding of the Constitutive General Assembly of the AUEI of Konni

The constitutive general assembly of the AUEI was held on Saturday March 14, 2020 in the courtyard of the cooperative in Birni N’Konni (**Figure 3**). The opening ceremonies were chaired by the Prefect of the Department of Birni N’Konni, in the presence of the mayor and the Head of the Canton of Konni. A system consisting of a meeting office, ballot papers, voting booth and ink was put in place to ensure transparency in the organization of elections for members of the AUEI office. Only the 115 delegates elected by producers at the level of the hydraulic sectors have the right to apply for a position as member of the AUEI office (**Figure 4**).



Figure 3. Konni authorities participating in the establishment of the AUEI office. Source: Abdoukarimou, S, March 2020.



Figure 4. Participants in the elections of members of AUEI bodies. Source: Abdoukarimou, S, March 2020.

4.3. Brief Overview of the Operational Functioning of the Konni AUEI

After its establishment, the AUEI experienced a certain lethargy for some time linked to the advent of the Coronavirus in Niger. After the lifting of measures linked to the confinement of the city of Niamey and those relating to the organization of workshops and meetings of more than 50 people, the AUEI of Konni carried out numerous activities which can be grouped into three categories.

4.3.1. Holding Regular Internal and External Meetings of the AUEI of Konni

To ensure its functioning, the AUEI is required to organize, between its members and between them and other actors and partners, regular meetings. **Table 2** presents examples of meetings or meetings held by the AUEI of Konni.

The various meetings made it possible to finalize the presentation of the operating account for the 2020 wet season (**Table 3**).

Table 2. Some meetings held by the AUEI of Konni between 2020 and 2021.

Meetings	Agenda/Purpose	Participant profile
Meeting of June 17, 2020	Conservation of the AUEI archives	MCA-Niger Consultants, Members of AUEI bodies
	AUEI's provision of office equipment and furniture	
	Recruitment of AUEI staff	
	Holding the extraordinary AGM	
Meeting of June 24, 2020	The fate of the cooperative union	MCA-Niger consultants, Aiguadiers and AUEI leaders
	Konni's AHA reform and water management	
	The new mission of the sewers	
Meeting of August 28, 2020	The adequacy between the hydraulic sectors and the number of waterworkers	MCA-Niger Consultants, Members of AUEI bodies
	Recruitment of permanent AUEI staff	
Meeting of November 1, 2020	Forecast of areas to be irrigated for the 2020-2021 dry season campaign	MCA-Niger consultants, members of the AUEI bodies, ONAHA-Konni, delegates from the hydraulic sectors, canton chief

Source: Abdoukarimou. S, March 2020.

Table 3. Operating account for the 2020 wet season of the Konni perimeter.

Objects/Designations	Konni perimeter 1	Konni perimeter 2
Variable expenses	8,228,055	6,666,530
Fixed charges	6,744,519	5,468,649
Total charges	14,967,574	12,135,379
Areas developed	4,176,225 ha	350 ha
Areas exempt due to flooding and late sowing	4287 ha	46,175 ha
Areas retained liable for payment	3,747,525 ha	303,825 ha
Royalty on 0.75ha	16,456 F	16,456 F
Total royalties to be recovered	8,223,055	6,666,528

Source: based on CACG data, 2021 [4].

In total, the fees to be recovered for the 2020 wet season agricultural campaign for the two Konni perimeters amount to 14,889,583 CFA francs. However, members of the AUEI will subsequently be informed by MCA officials of the impossibility of exploiting the plots during the 2020-2021 season due to rehabilitation work.

4.3.2. Participation in Exchange and Capacity Building Workshops outside the City of Konni

The first workshops that took place enabled the AUEI to be put in touch with financing institutions. On November 5, 2020, two exchange workshops were held for the benefit of the AUEI and the cooperative society. Organized by MCA Niger, the first workshop aims to connect these two new organizations with financing institutions, particularly banks and microfinance. The second workshop is a restitution of the results of the audit of the assets of the cooperatives of Konni and 1 and 2 presented by the FISCA Firm. This meeting allowed the organizations to agree on the method of distribution of goods and to draw up a road map for the operationalization of this distribution.

In addition, from November 21 to 30, 2020, three officials from the AUEI of Konni participated in the peasant days organized by the Niger peasant platform. These days aim to enable farmer leaders to become aware of their roles in order to better defend the interests of producers. It is also a question of imbuing peasant leaders with national, regional and international agricultural policies but also of strengthening their technical and economic capacities to meet the needs of their members.

These various meetings were an opportunity to give more visibility to the AUEI, especially at the national level.

4.3.3. Organization and Holding of an Ordinary General Meeting

On Sunday February 7, 2021, the first ordinary general assembly of the AUEI of Konni was held in Konni, with 113 delegates taking part in the meeting out of the 115 in the association, *i.e.* an attendance rate greater than 98%. Distinguished guests also participated in the AGM. These were the representative of the mayor of Konni and the representative of the Chief of Canton of Konni. The points on the agenda related to the amendment and adoption of points supplementing the regulatory texts (statutes and internal regulations), the 2021 budget, the collection of the 2020 wet season campaign fee, the collection costs related to the purchase of the AUEI membership card. After this first general assembly, two others will be organized by the delegates to discuss the functioning of the AUEI and to reflect on the challenges to be met.

4.4. Stakeholder Perceptions

In addition to the data collected on the governance of the association, surveys were carried out on the perceptions and vision of stakeholders on the reform.

Figure 5 shows the results of the survey.

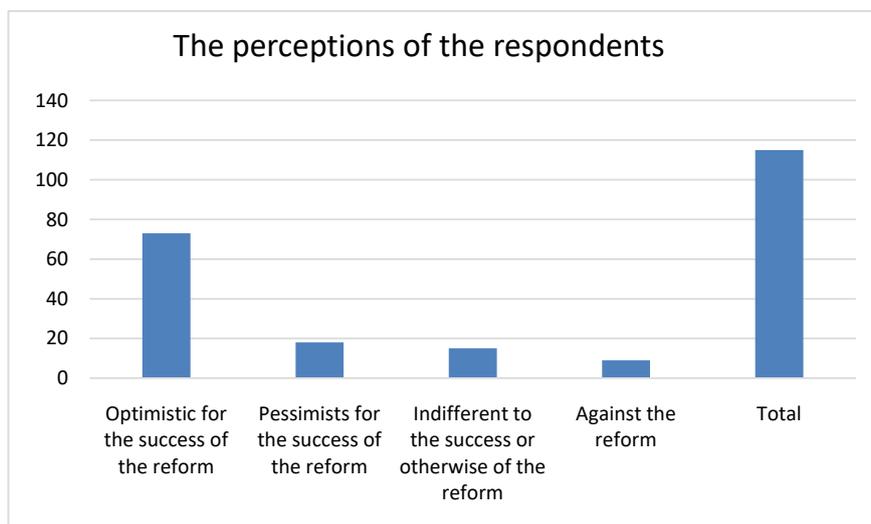


Figure 5. Stakeholders' perception of the reform.

As the graph shows, 73 people surveyed, or 63.4% of the sample, are optimistic and think that this reform will succeed because its content is completely mastered and appropriated by the local populations, particularly the operators of the Konni development. Unlike previous reforms, that of 2016 followed a bottom-up and participatory approach. These people are mainly made up of farmers and traditional chiefs.

18 people or 15.6% of the sample are pessimistic about the success of the reform and consider that it will fail like the others because it is dictated from the outside by donors. This group is mainly made up of technicians from decentralized administration services (agriculture, environment, hydraulics, rural engineering) and a few leaders from producer organizations and civil society.

15 people surveyed are indifferent to the success or failure of the reform. These are mainly operators of the Konni development. For this group, any reform that does not help farmers to market their production so that they can make a better profit from their activity is of no use.

Finally, the remaining 9 people spoke out against the reform. For these people, this form which he describes as remote-guided and imposed by technical and financial partners including the MCC and the World Bank is not viable. This group is mainly made up of ONAHA agents, which is the structure responsible for supervising the producers of the Konni development. For some, the reform calls into question their interests (financial, legitimacy vis-à-vis farmers).

4.5. Short and Medium Term Issues and Challenges Linked to the Operationalization of the AUEI

In accordance with the indications of the founding legal texts of the AUEI, to be operational, this new organization must be autonomous in the management of water and irrigation infrastructure. With the reform, the role and missions of Onaha, which oversees the developments, must inevitably change. In-depth ref-

lections will have to be carried out within Onaha to redefine its new missions in support of the AUEI and the new cooperative societies which were all created in the wake of the reform.

Certainly Onaha was involved in the negotiations with donors (World Bank, Millennium Challenge Cooperation, GIZ, etc.) during the development of the regulatory texts for the reform of the governance of developments but within it, it has not given sufficient thought to the consequences that will follow. It was only during the implementation of this reform that Onaha realized the negative impacts of the reform in relation to its own survival as a development management institution. We are therefore witnessing a reluctance on the part of the institution to fully implement all of the provisions contained in Order 063/MAGEL/MH/A. However, the signing of this joint decree by the Minister of Agriculture and that of Hydraulics is a prerequisite required by donors for financing the rehabilitation of Niger's hydro-agricultural developments in a state of advanced degradation and the financing of support for the AUEI and the cooperative society.

Following the discussions we had with the various stakeholders involved in the operationalization of the Konni AUEI, we noted that significant challenges and constraints must be met to make this new organization efficient, autonomous and sustainable.

It should be remembered that support for the Konni AUEI is a pilot experiment financed at great expense by the Millennium Challenge Cooperation which was to serve as an example of good practice to be capitalized by other AUEIs of other hydro-agricultural developments. of Niger.

4.5.1. Onaha's March Backwards in the Implementation of the Reform in Its Entirety

The problem of interpretation of the reform texts by the parties

As indicated above, it is Onaha which oversees the developments. He decided during a workshop held on June 3 and 4, 2021 in Tillabéri to revise certain texts of the reform.

During this workshop, the aim is more specifically to examine and validate the following documents and tools :

- The proposed revision of the annexes to the ONAHA-Cooperative Societies/AUEI operating contracts;
- The provisional texts on "Organization and operation of joint joint committees" (Joint Committee for monitoring the management of the hydraulic fee; and Joint Committee for the management of developed plots);
- The simplified guide to the operationalization of the AUEI and the standard cooperative society/AUEI collaboration agreement;
- The key to sharing costs between the cooperative society and the AUEI.

Concerning the AUEI, ONAHA has developed a new decree (265/MAG/SG of September 3, 2021) which creates a joint committee to control the management of the hydraulic fee.

Following the analysis of this decree by the delegates of the AUEI of Konni during a general assembly, the latter noted the existence of contradictions between the new texts adopted and decree 063/MAGEL/MH/A of September 29, 2016. The provisions of article 2 “the AUEI is a non-profit legal entity under public law which has management autonomy...”, article 4 “the AUEI has the mission of setting the amount and collect the fee from its members. Etc.”, and article 9 “the AUEI sets the amount of royalties at a level allowing it to meet all its financial obligations and ensures their recovery” of the joint decree are in contradiction with article 3 of the Order 265/MAG/SG of September 3, 2021 and calls into question the management autonomy available to the members of the AUEI.

Latent AUEI-Onaha conflict in relation to ONAHA support

Before the reform of the management of developments and more particularly of the irrigation sector, for the case of the Konni perimeter, it is the agents of ONAHA who support the cooperatives in the preparation of the agricultural campaigns (dry season and wet season). They are the ones who evaluate the quantities of water available for each campaign, who identify the plots to implement value, who ensure equitable management of water, etc. To compensate for these activities, Konni farmers pay an amount called ONAHA support at the rate of 4000 per hectare. With the reform of the irrigation sector, the management of water and irrigation infrastructure, as well as the preparation of agricultural campaigns and the maintenance of infrastructure were transferred to the AUEI. To be able to accomplish its missions, the AUEI of Konni has recruited permanent staff, notably an irrigation engineer occupying the position of manager and an accountant; and as a result she can no longer continue to pay ONAHA support. The services for which AUEI members pay ONAHA support are covered by the association itself and they consider it irrelevant to continue paying for a service from which they no longer benefit.

In view of the new operating costs of the AUEI, the payment of ONAHA support constitutes a constraint and even a threat to the operationalization of the AUEI. Indeed, the services for which AUEI members pay ONAHA support are covered by the association itself, it is no longer relevant to ask operators to pay ONAHA support. From then on, an open conflict opposed ONAHA and the 115 delegates of the AUEI concerning the payment of the fee. However, this conflict is today an obstacle to the signing of the AUEI-ONAHA operating agreement. It is the signing of the AUEI-ONAHA operating contract which makes the transfer of water management and irrigation infrastructure from ONAHA to AUEI effective. As long as the contract is not signed, the reform of the irrigation sector will not be effective and the AUEI will not be able to assume the missions assigned to it by Order 063.

4.5.2. Constraints Linked to the Delay in the Completion of Rehabilitation Works

Originally, the rehabilitation work had to be completed in time to allow the

AUEI to practice water management and organize agricultural campaigns. With the delays in carrying out the work, there is a risk that the AUEI will not be able to prepare and organize an agricultural campaign during the dry season because it is during this season that it will truly be able to put into practice the training received in water management and maintenance of irrigation infrastructure.

4.5.3. Uncertainties Linked to Access to Water

The development of the Konni AHA is closely linked to the availability of rain-water. Irrigation is gravity type. One of the most critical points for the proper functioning of the AUEI is the uncertainty of guaranteeing access to water in sufficient quantity for the development of the areas of the Konni AHA. This uncertainty arises from different factors:

- insufficient precise knowledge of the water resources available in the AHA sub-watershed;
- silting of the reservoirs of the two dams and the buffer reserve which limits the availability of the resource;
- the lack of precise knowledge on the interrelationships between the different water reservoirs: surface water, shallow groundwater, deep groundwater;
- interannual variability of rainfall linked to climate change which results in the frequency of dry years.

4.5.4. Awakening of Awareness among Producers and Their Managers

Following the intensive information and awareness campaign for producers on the content of the texts of the reform carried out by the facilitators of the GDSI project, the 4800 members of the AUEI of Konni and their leaders have perfectly understood and internalized their role, their missions and responsibilities in the success of the reform. As a result, producers no longer accept that ONAHA dictates to them and imposes decisions contrary to the letter and spirit of the texts of the reform of the governance of developments. The training received and the study trips were of great use to the producers and their managers in successfully creating an efficient, autonomous and sustainable AUEI on the Konni AHA. Despite the challenges and constraints they face, this achievement constitutes undeniable hope for the success of the new mission entrusted to the producers of Konni which consists of efficiently and sustainably managing the water and irrigation infrastructure of the AHA of Konni.

5. Discussion

In Niger, as in most sub-Saharan African countries, the rural development strategies adopted following independence resulted in failures. This is what K. Gbemou (1994, p. 55) [5] and X. Bernier (1997, p. 30) [6] emphasized. The lack of mobilization and effective participation of populations as actors constitutes the main reason for these failures. This lack of consultation with the stakeholder populations who, as a result, never felt responsible for the works explains the reforms that took place in the governance of AHAs in Niger and the creation of Ir-

rigation Water Users Associations (AUEI). These findings confirm the work of T. Abotchi (2006, p. 55) [7] in Togo.

The poor organization of the water service, the lack of upkeep and maintenance of networks and equipment, the lack of orthodoxy and transparency in the management of the fee have undermined the different stages of centralized management and self-management by operators. These factors were also mentioned by K. N. Kaigama [8]. Therefore, to guarantee the sustainability of the works and ensure sustainable management of irrigation systems, the use of a water users association is considered a major reform in the management of irrigation schemes. The results obtained confirm those obtained by M. I. Maïga *et al.* [2].

After its establishment on March 14, 2020, the AUEI of Konni carried out numerous activities, which allowed it to recover an increasingly large number of fees. Water management seems better through the planning put in place. These results contradict the observation made in 2010 by M. I. Maïga *et al.* [2] who concluded that on the Galmi perimeter in Niger, due to lack of application of the texts, anarchy reigns with a non-functional AUE office.

The application of the principle of subsidiarity, systematically implemented in local management approaches, has led to the empowerment of water users. In accordance with the provisions of Order 063/MAGEL/MH of September 29, 2016, the main mission of the AUEI is to ensure better management of water, hydraulic equipment and infrastructure on hydro-agricultural developments in Niger. This initiative is consistent with what applies to Senegal, where for most hydro-agricultural works projects, this accountability takes the form of the creation of a management committee which is responsible for managing the work. and its use through the Association of Operators of Rainwater Retention Works (ASOREP), which is the leading actor in local governance and the development partner [9]. ASOREP, like the AUEI of Konni, is a non-profit association, bringing together all socio-professional categories exploiting the water resources of the area.

Numerous works focus on the resurgence of organizational methods specific to the society in place in the management systems originally decided [10]. The expression of social statuses, mutual aid and power structures disrupt an organizational model very often based on egalitarian sharing of resources. These elements cannot today be hidden: in a context of empowerment of farmers, it seems legitimate to grant them, not only the charges linked to the management of the areas, but also a certain margin of freedom in decisions concerning sharing Resource. Too often, since the internal regulations are written according to a model provided by the office, they are not respected, in favor of verbal rules of understanding. The same observation was made by Adama T *et al.* [11] who believe that the purpose of these organizations is poorly defined at the outset. Versatile, they are involved in several functions, to the detriment of the maintenance of the facilities. Their operation is very centralized and there is a clear tendency

towards the concentration of powers, while their agents generally have insufficient skills in terms of organization, water distribution, upkeep and maintenance of the facilities.

6. Conclusion

Initiated with the official launch of the activities of the sustainable management of irrigation systems project, the process of setting up the AUEI of Konni was carried out in very good conditions, and the obligatory steps provided for by joint order 063 were scrupulously respected. The participatory and inclusive approach adopted made it possible to involve all the operators of the area, with the massive support of all social categories (men, women, young people) in the process of creating the AUEI. In a new context of reform of the governance of AHAs, a participatory diagnosis of the current state of the hydro-agricultural development of Konni allowed the operators of the perimeter to become aware of the assets, but also of the heavy constraints which weigh on the success of water management and irrigation infrastructure on the Konni perimeter. Thanks to the implementation of an intensive information and awareness campaign for populations and stakeholders, the various stakeholders have a better understanding of the issues and challenges linked to the establishment of an efficient association within the Konni area, functional, autonomous and durable. Once installed, the AUEI of Konni was able to hold meetings and commit to respecting its specifications. However, the many constraints that remain deserve to be lifted very quickly. A training and capacity building program for the various actors involved in the management of the area has been implemented but remains to be applied on the ground. We note an enthusiasm and a real awareness of the challenges by the actors in order to successfully implement the reform. This state of mind will promote among all the actors concerned an awareness of their responsibility and their role in driving a dynamic which will allow the young association to be autonomous, functional and to manage water and irrigation infrastructure in a sustainable manner.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Abdoukarimou. S. (2023) Konni Dams and Hydro-Agricultural Development in the Face of Climate Change. Niamey, 18 p.
- [2] Mossi Maïga, I., Saidou, A.M., Amirou, S.I. and Rabiou, H. (2010) Rapid Participatory Diagnosis and Planning of Actions in the Galmi Perimeter (Konni Department-Niger). ANID, Niamey, 67 p.
- [3] MCA-Niger (2020) Contractual Deliverable No. 7.1. *Konni AUEI Establishment Report*, 45 p.
- [4] CACG (2021) Implementation of the Sustainable Management of the Irrigation

- System (GDSI) Sub-Activity. *Establishment Report of the AUEI of Konni*, MCA, Niamey, 45 p.
- [5] Gbemou, K.M. (1994) Failure of Development Operations in Rural Areas: Evaluation of the Mission-Tové-Kovié Rice Project. University of Benin, Lomé, 154 p.
- [6] Bernier, X. (1997) Changes in Rural Areas in Developing Countries. Éditions Economica, Paris, 112 p.
- [7] Abotchi, T. (2006) The Main Causes of the Failure of the Irrigated Rice Growing Development Project in the Amou Valley. *Annals of the University of Lomé, Letters and Human Sciences Series*, **26**, 55-59.
- [8] Kaigama Kassatchia, N. (2003) Study with a View to Defining the Modalities of Implementation of Pilot Experiments (Tests) of Reform of the Management of Hydro-Agricultural Developments of Konni, Galmi, and Giratawa. Final Report, Niamey, ANPIP, 130 p.
- [9] CTB Senegal (2017) Towards Inclusive Management of Hydro-Agricultural Works. *Senegal Agriculture, Experiences, Capitalization Document*, No. 2, 16 p.
- [10] Guillaume, J. (1997) The Conditions for Peasant Management of Hydro-Agricultural Developments in West Africa. *Summary of the International Seminar in Niamey*, 24-28 September 1996, Files of the Inter-Réseaux Développement Rural, Paris, 14-55.
- [11] Toure, A., *et al.* (1997) Review of the Policy of Transfer of Hydro-Agricultural Developments to Peasant Organizations in the Senegal River Delta. The Conditions for Peasant Management of Hydro-Agricultural Developments in West Africa, *Summary of the International Seminar in Niamey*, 24-28 September 1996, Dossiers de l'Inter-Réseaux Développement Rural, Paris, 33.