REVIEW AND PROSPECTS OF THE TRANSFER OF MANAGEMENT TO IRRIGATORS' ASSOCIATIONS IN WAIDMA AREAS

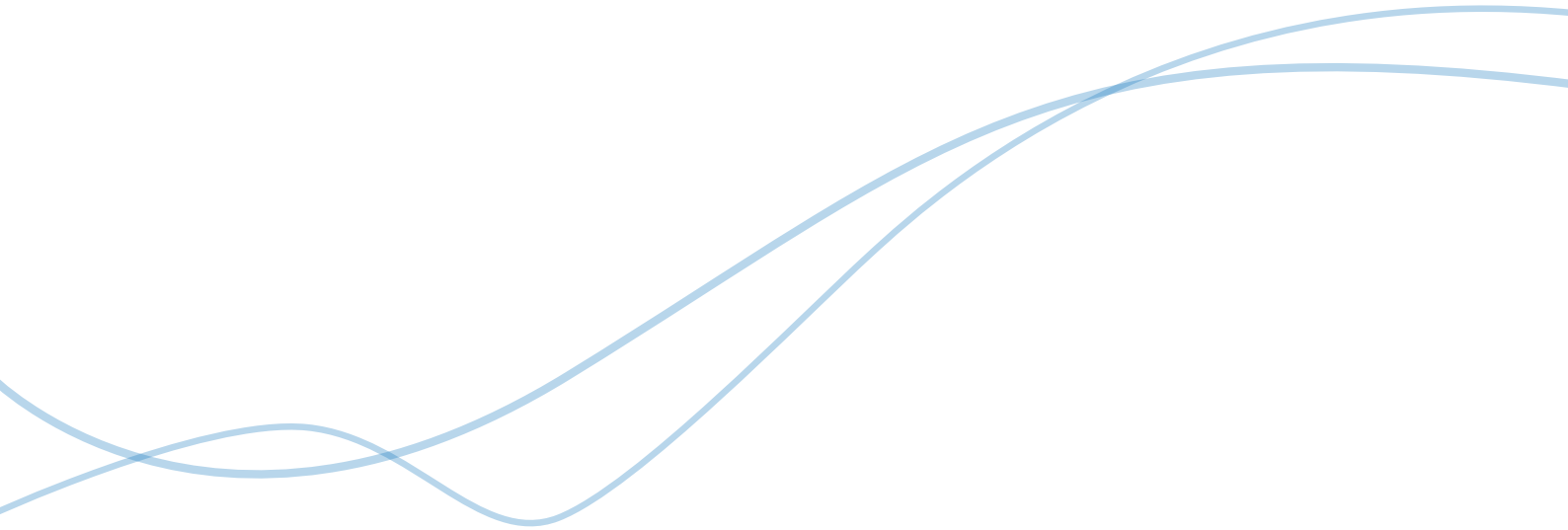
Writers:
El hadj Saminou Dango, Thomas Hertzog,
Jean-François Kibler & Paola Pommier

Contributing SAGI experts:
Emmanuel Compaore, Paul Marie Faye & Karine Le Maux

With the support of
AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

Ordered by
AFEID

COSTEA
ENSEMBLE POUR RELEVER LES DÉFIS DE L'AGRICULTURE IRRIGUÉE



Campus du Jardin d'agronomie tropicale de Paris
45 bis avenue de la Belle Gabrielle
94736 Nogent-sur-Marne Cedex, France
Tél. : 33 (0)1 70 91 92 00
Fax : 33 (0)1 70 91 92 01
gret@gret.org
http://www.gret.org

Contact :
Consortium Gret-SCP (Gret chef de file)
Jean-François Kibler, Responsable de Programme Gret
Tél. : +33 (0)7 85 28 90 54
Mail : kibler@gret.org

Thomas Hertzog, Chef de mission
Tél. : +33 (0)6 29 57 07 52
Mail : thertzogconsult@gmail.com

REVIEW AND PROSPECTS OF THE TRANSFER OF MANAGEMENT TO IRRIGATORS' ASSOCIATIONS IN WAIDMA AREAS

INTRODUCTION 6

PROJECT SCHEDULE 6

REMINDER OF KEY MOMENTS OF PARTICIPATION IN COSTEA MEETINGS AND EVENTS 6

1. PROJECT METHODOLOGY AND IMPLEMENTATION 7
1.1 Building a team of different experts 7
1.2 Position of the experts of the team 7
1.3 Method and tools 8

2. DIFFICULTIES ENCOUNTERED AND LIMITATIONS 9
2.1 In relation to the start-up of the study 9
2.2 In relation to the documentary collection 9
2.3 In relation to the comparative analysis 10
2.4 In relation to the in-depth diagnosis 10

3. DIFFICULTIES ENCOUNTERED AND LIMITATIONS 10
3.1 Presentation of the WAIDMAs and of the actors met 10
3.2 Presentation of the main result 10

4. RECOMMENDATIONS 16
4.1 Ensuring that a framework that legitimises the transfer is in place 16
4.2 Understanding that the transfer process is dynamic, with feedback and adaptation, rather than linear 17
4.3 Meeting the conditions for irrigators' associations to be viable 17

5. CONTRIBUTING TO A COLLECTIVE LEARNING DYNAMIC WITHIN ROA-SAGI 18
5.1 The limitations of written communication and a change of approach 18
5.2 A committed collective learning process 18
5.3 Structuring the project around videoconferences 19
5.4 Summary of the types of learning 19

6. CONCLUSION AND RECOMMENDATIONS 20

ACRONYMS

AFD	Agence Française de Développement (French Development Agency)
AFEID	Association Française pour l'Eau, l'Irrigation et le Drainage (French Association for Water, Irrigation and Drainage)
AMVS	Autorité de Mise en Valeur de la vallée du Sourou (Sourou Valley Development Authority)
AUEI	French acronym used by the ONAHA to refer to irrigators' associations: Association des Usagers de l'Eau d'Irrigation (in English: Irrigation Water Users' Association, IWUA)
AWUO	Agricultural Water Users' Organisation, French abbreviation: OUEA
CAIMA	Centrale d'Approvisionnement en Intrants et Matériels Agricoles (Agricultural Input and Material Supply Centre)
CATG	Centre d'Appui Technique et de Gestion (Technical and Management Support Centre)
CE	Contributing Expert
CGER	Centre de Gestion et d'Economie Rurale (Rural Management and Economics Centre)
CIFA	Centre Interprofessionnel de Formation aux métiers de l'Agriculture (Interprofessional Training Centre for Agricultural Occupations)
CILSS	Comité Inter Etat de Lutte contre la Sécheresse au Sahel (Permanent Interstate Comittee for Drought Control in the Sahel)
CIRIZ	Comité Interprofessionnel Riz du Sénégal (Interprofessional Rice Committee of Senegal)
COSTEA	Comité Scientifique et Technique de l'Eau Agricole (Scientific and Technical Committee for Agricultural Water)
DAGEE	Division Aménagement et Gestion de l'Eau et de l'Environnement (Water and Environmental Planning and Management Division)
DAM	Direction Autonome de la Maintenance (Autonomous Maintenance Department)
EIG	Economic Interest Grouping
EU	European Union
FP	Focal Point
FPA	Fédération des Périmètres Autogérés (Federation of Self-Managed Schemes)
FUCOPRI	Fédération des Unions de Coopératives de Producteurs de Riz (Federation of Unions of Rice Producers' Coopératives)
GRET	Groupe de Recherche et d'Echanges Technologiques (Technological Research and Exchange Group)
IA	Irrigators' Association: a generic term adapted depending on the WAIDMA (EIG, AWUO, etc.)

ACRONYMS

ICDE	Ingénierie Conseil en Développement d'Entreprise (business development consultancy firm)
INRAN	Institut National de la Recherche Agricole du Niger (National Institute of Agricultural Research of Niger)
ISRA	Institut Sénégalais de Recherches Agricoles (Senegalese Institute for Agricultural Research)
IWUA	Irrigation Water Users' Association, French abbreviation: AUEI
LBA	La Banque Agricole (the Agricultural Bank of Senegal, former CNCAS)
MCA	Millennium Challenge Account (USA funding)
MMN	Management and Maintenance Note
NGO	Non-governmental organisation
O&M	Operation and Maintenance
ODRS	Office de Développement Rural de Sélingué (Rural Development Office of Sélingué)
OHADA	Organisation for the Harmonisation of Business Law in Africa
ON	Office du Niger (Office of Niger)
ONAHA	Office National des Aménagements Hydroagricoles (National Office for Hydro-Agricultural Facilities)
ORS	Office Riz Ségou (Ségou Rice Office)
OUEA	French acronym used by the AMVS to refer to irrigators' associations: Organisation d'Usagers de l'Eau Agricole (in English: Agricultural Water Users' Organisation, AWUO)
PARIIS	Projet d'Appui Régional à l'Initiative pour l'Irrigation au Sahel (Regional Support Project for the Sahel Irrigation Initiative)
RINI	Société Riz du Niger (Rice Agency of Niger)
ROA-SAGI	Réseau Ouest-Africain des SAGI (West African Network of WAIDMAs)
SA	Structuring Action
SAED	Société Nationale d'Aménagement et d'Exploitation des terres du Delta du fleuve Sénégal et des vallées du fleuve Sénégal et de la Falémé (National Agency for the Development and Use of the Senegal River Delta and of the Senegal River and Falémé Valleys)
SCOOP	Société coopérative (cooperative society)
SCP	Société du Canal de Provence
WAIDMA	West African Irrigation Development and Management Agency
WB	World Bank

INTRODUCTION

The 'Transfer of Management to Irrigators' Associations (IAs)' project was launched in February 2020.

Stage 1 consisted of an inventory enabling the compilation of a database with 80 documents on the six West African Irrigation Development and Management Agencies (WAIDMAs) covered by the project: AMVS, ONAHA, SAED, ODRS, ON and ORS. These documents were selected for their relevance to the project from the 103 documents collected. The final version of the inventory note (deliverable 1) was delivered on 17 September 2020.

Stage 2 involved drawing up a comparative and commented overview of the situation in terms of the transfer of management to IAs in the six WAIDMAs. Deliverable 2 was structured around the analysis of six thematic areas using the documents collected in stage 1, the expertise of the contributing experts (CEs) from SAED, AMVS and ONAHA, and the inputs of the focal points from ODRS, ON and ORS. This stage took place between September 2020 and April 2021 with multiple discussions within the team in a collective learning process.

Stage 3 marked a turning point in the study allowing all the team members to meet to discuss the WAIDMA diagnoses carried out between June and August 2021 at SAED, then at ONAHA and AMVS. At the end of the field visits and meetings with the WAIDMAs, IA representatives and resource persons, an in-depth diagnostic report was drafted for each of these three WAIDMAs (deliverables L3a, L3b and L3c).

Stage 4, launched in April 2022, focused on the Transfer project team's participation in the ROA-SAGI seminar in Saly (Senegal, from 23 to 25 May 2022).

The objectives of this report (deliverable L4) are to: (1) draw up a synthesis of the results obtained during the project concentrating on the points discussed during the Saly workshop; (2) provide feedback on the management of the project and the collective learning process within the team.

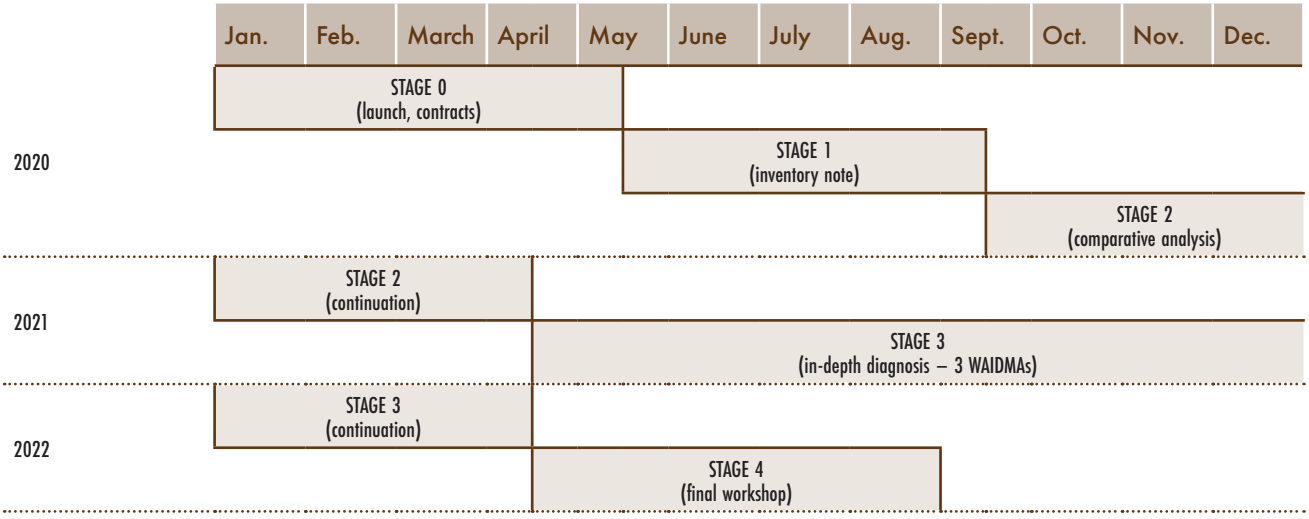
It is therefore structured in five main sections:

- Method implemented to carry out the study;
- Difficulties encountered and limitations of the study;
- Synthesis of the results;
- Recommendations and key messages;
- Contributions to a collective learning process within ROA-SAGI (West African Network of WAIDMAs).

REMINDER OF KEY MOMENTS OF PARTICIPATION IN COSTEA MEETINGS AND EVENTS

Date, Periods	Activities
04.06.2020	Scientific and Technical Committee of COSTEA participation
17.12.2020	Consultative Group Meeting 1
30.06.2021	Scientific and Technical Committee of COSTEA participation
09.11.2021	Consultative Group Meeting 2
21-26.03.2022	Participation at the World Water Forum - Dakar
23-25.05.2022	Structuring Action (SA)-WAIDMA Seminar in Saly (Senegal)

PROJECT SCHEDULE



1. PROJECT METHODOLOGY AND IMPLEMENTATION

1.1 Building a team of different experts

The team was made up of three contributing experts (CEs) from the WAIDMAs (the CE from ONAHA was also co-pilot of the project), two key experts from the consortium (one from GRET, head of mission, and one from SCP), and two supporting experts with complementary profiles (one from GRET and one from SCP).

The first challenge in conducting the project was to **form a team** with different experts spread over four countries, with the pandemic situation preventing face-to-face meetings.

It was therefore necessary to define a communication protocol among the team members based on dynamic and interactive tools adapted, as far as possible, to the realities of the different countries and the experts' usual practices. This process quickly became complex due to the need to adapt the means of communication on a case-by-case basis, leading to higher transaction costs (reminders, duplication of working sessions, postponement of meetings, etc.).

The second challenge was to **optimise the participation of the CEs** as project members in their own right. This involved both capitalising on their in-depth knowledge of the reality of the transfer in their respective WAIDMAs, and ensuring that the tasks were shared out in line with their level of contractual effort, i.e. a number of days invoiced by each CE equal to those of the main experts of the consortium.

Regular meetings were proposed, mainly by videoconference, in order to encourage discussion of the intermediate results of the stages of the project, but also to build tools together, validate the methodological choices and discuss the distribution of tasks. Adaptations due to difficulties encountered and developments in the issues at stake were systematically discussed and adopted within the team.

Finally, the third challenge was to enable the **active participation of the focal points (FPs)** of the three WAIDMAs in Mali, without them being paid for their time.

It should be pointed out that the levels of mobilisation of the three FPs varied, despite the establishment of a relay with each FP by an appointed CE (Table 1). The number of documents collected, as well as the inputs for certain intermediate deliverables, were relatively limited. This did not allow the analysis to be as thorough as desired (explicit mentions in deliverables L1 and L2). The mobilisation of the FP of ORS, from stage 1 to the Saly workshop, should be underlined.

Table 1: List of FP/CE pairs set up

WAIDMA	Member of the team responsible for collection	Focal point for the WAIDMAs not represented in the team
ON	Emmanuel Compaoré	Souleymane Mounkoro
ORDS	Paul Marie Faye	Hamet Keita
ORS	El Hadj Saminou	Dramane Diara
ONAHA	El Hadj Saminou	
SAED	Paul Marie Faye	
AMVS	Emmanuel Compaoré	

1.2 Position of the experts of the team

The participation of contributing experts as team members (including a co-pilot) was a significant innovation in COSTEA 2's structuring actions.

This innovation was accompanied by a consideration of their position as experts of their WAIDMA but also as members of ROA-SAGI for several years (already giving them an insight into other WAIDMAs).

It is important to bear in mind here that this exercise's value came from the cross-fertilisation of the experiences of the different team members (the three CEs, but also the GRET and SCP experts), which resulted in divergent interpretations of the same reality. The aim was not to achieve 'one model' and 'one truth', but rather to enrich the experiences of the WAIDMAs with each other in a reasoned manner.

The team had to guard against two main pitfalls in its analyses: (1) the predominance of the opinion of a given CE on his own WAIDMA preventing the other team members from questioning the documents or practices observed; (2) the transposition of one expert's vision onto the other WAIDMAs leading to criticisms that disregarded the historical context and internal/external requirements specific to each structure.

The main solution was the **cross-participation of the CEs and the consortium's experts** in the in-depth diagnoses of SAED, ONAHA and AMVS. All of the CEs were mobilised for the first SAED diagnosis; the SAED and ONAHA experts were also mobilised for AMVS; and the AMVS expert participated in the ONAHA diagnosis. During these field missions, the experts mobilised fully played their roles in guiding the discussions. They provided their expertise to: (i) structure the discussions and analysis; (ii) compare the initial findings with their knowledge and with relevant regional and international experiences. Through their own experience, the CEs helped to focus the discussions on issues that could be used as a basis for comparison with other WAIDMAs. The international experts were able to use their more distanced position to ask for clarification and go into greater depth on certain statements that seemed to lack objectivity. They contributed their expertise to compare the first findings with lessons learned in other regional and international contexts.

The cross-fertilisation of the experts' views was facilitated by the **creation of sub-groups** to draft the various parts of the deliverables (Box 1). This organisation made it possible to generate discussions in small groups (follow-up of modifications or e-mail/telephone discussions).

BOX 1: ROLES OF THE REFERENTS AND CONTRIBUTORS IN THE ANALYSIS

Referent:
Main author of the analysis (produces the first version and the corrected versions).
Stimulates discussions with the other experts of the team to improve the document.

Contributor 1:
Provides guidance and consolidates the document produced by the referent.
Consolidates the document by adding additional elements of analysis.

Contributor 2:
Proofreads the document more rapidly (comments, some additions) depending on the time available and usefulness in contributing to the substance of the document.

1.3 Method and tools

Start-up

As a reminder, in accordance with the client's directives, the WAIDMA CEs were not involved in drafting the consortium's technical offer. One of the main challenges of the start-up phase was therefore to **encourage buy-in to the main areas of the method** proposed in the technical offer and **to propose amendments** to it to reflect the realities of the WAIDMAs.

A form was created to facilitate the experts' contributions. The various adjustments proposed were then discussed by videoconference to be ratified.

It should be noted that these adjustments were essentially intended to operationalise elements of the methodology proposed in the technical offer with regard to their feasibility in the field.

The documentary inventory

Stage 1, which led to the document inventory note (deliverable L1), was organised in three steps:

1. Collection of the documentation;
2. Inventory of the collected material;
3. Summary analysis of the content of the documentation in order to identify any gaps according to the different WAIDMAs and the themes of the project.

The collection was facilitated by the use of the DropBox platform which best suited the working practices and connection constraints of the various team members.

A shared folder, 'SA-WAIDMA_Transfer to IAs Project', was created with modification rights for all team members, each of whom could therefore submit documents:

- in a continuous manner (as the data was collected);
- or in batches (upload by the CEs when they had a connection, for example, upon returning to the headquarters of their WAIDMA).

The shared documents were classified according to their degree of relevance for the project. Only relevant documents were kept, and classified by theme (see Table 2).

Table 2: The thematic areas of the Transfer of Management to IAs project

Area	Theme covered	Number of documents addressing the theme
1	Transfer policy and procedures	25
2	Governance	21
3	Operation and maintenance	29
4	Administrative, economic and financial management	27
5	Organisation and professionalisation	15
6	Agricultural development	11

The documents were then inventoried in an Excel database according to a complete list of information to be filled in, as defined by the team.

It should be noted that the summary analysis had a dual purpose. The first was factual and was to enable the inventory note to be drafted. The second was process-related and was to identify gaps in the documentation for certain WAIDMAs and certain themes in order to complete them as far as possible during the country diagnoses.

All of the documentation compiled is available in the COSTEA database, which is accessible online free of charge: www.comite-costea.fr/base-documentaire-eau-et-agriculture.

The comparative analysis

The comparative analysis was structured around the six thematic areas of the project (table 2).

Two main tools were used to facilitate the comparative analysis:

- **a detailed analysis grid** to be filled in by each of the six WAIDMAs, which served as a matrix for drawing up the sheets;
- **a comparative pre-analysis framework** per thematic area, structured in four sections:

1. Information available for the comparative analysis of the thematic area;
2. Overall analysis (common points and divergences among the responses provided in the grids);
3. Detailed analysis (factors linked to the thematic area that could explain the success of the transfer or the difficulties);
4. Significance of the analysis for the members of ROA-SAGI (elements to be documented, lessons to be taken).

The in-depth diagnosis

The field diagnoses of stage 3 marked a turning point in the project. Indeed, stages 0, 1 and 2, which had been carried out previously, had mainly focused on processing the documentation collected and the information transmitted by the contributing experts.

The operational objectives of the field diagnoses were essentially to:

i. complete the information collected until then on each of the WAIDMAs;
ii. compare the transfer theory with the realities on the ground;
iii. compare points of view (WAIDMAs, IAs, ecosystem actors);
iv. identify common points and differences in approach between the WAIDMAs;
v. propose questions to be put forward to ROA-SAGI.

The first diagnosis was carried out at SAED with all of the team members in the first face-to-face meeting after more than a year of the project being managed via videoconferences. SAED was also chosen due to its long experience in terms of transfer in order to reach an agreement on the criteria for selecting the schemes to be visited and the IAs to be met, and to fix the method and tools to be applied subsequently to ONAHA and AMVS in a small team. The discussions with the various actors were by way of semi-directive interviews based on guidelines designed by the experts mobilised for each WAIDMA. These were akin to **'chats',** which was particularly appropriate in this context

A **typology of IAs** to be met was developed by considering three main criteria of differentiation: (i) longevity (i.e. from a few years of operation to more than 30 years); (ii) functionality (i.e. fully functional, functional, crisis situation, specific case); (iii) geographical distribution within the WAIDMA area.

The diagnostic weeks ended with multi-stakeholder feedback workshops to immediately discuss the initial diagnostic elements and to complete/amend the analysis as necessary.

This standard method was nevertheless adapted to the specific context of each WAIDMA, as material and safety constraints did not necessarily allow it to be carried out in a uniform manner.

Finalisation of the study

The last stage of the project focused on the **ROA-SAGI seminar** in Saly at the end of May 2022 (production of ToR, participation/facilitation, development of recommendations).

Only one expert of the team was unable to participate in the seminar; the others could share their experience of the project with the representatives of the other WAIDMAs present.

The sessions dedicated to this project were organised with the aim of discussing points of convergence and divergence between the WAIDMAs represented, and thus identifying elements that could be the subject of strong messages or even recommendations. One of the main results of this seminar was to depart from the context of the three WAIDMAs represented by the CEs (ONAHA, SAED, AMVS) **to compare the main results obtained with the issues experienced by the other WAIDMAs of ROA-SAGI**.

The feedback of the seminar results was structured around some key points and messages that were agreed on during the two days of discussion and thus echoed the greatest number of WAIDMAs.

2. DIFFICULTIES ENCOUNTERED AND LIMITATIONS

2.1 In relation to the start-up of the study

The start-up phase was marked by discussions concerning the contracts between the consortium and the WAIDMAs for their provision of CEs. As the Transfer project was the first WAIDMA SA that was launched, an agreement had to be reached with the various parties on the content of these contracts, and in particular to clarify the WAIDMAs' conditions for mobilising their agents.

The review and signing processes took between one and three months.

In addition: (i) SAED changed the CE at the start of the project and (ii) the AMVS expert left after two months. These changes had limited consequences thanks to the efficient involvement of their successors.

The main difficulty in stage 0 was therefore the high transaction costs involved in finalising the contracts and adopting the method, as well as the slippage in schedule.

2.2 In relation to the documentary collection

The collection was complex due to:

- communication difficulties between the team members (i.e. difficulties with internet access),
- communication difficulties with the focal points of the three Malian WAIDMAs;
- difficulties with the schedule linked to the start of the winter season as well as the month of Ramadan and the Tabaski holiday.

The unstable internet connections in the CEs' countries of residence was a major obstacle for this stage of document collection, which required sending documents and participating in videoconferences.

Ad hoc arrangements were put in place to mitigate this difficulty, for example, by making an office of GRET's representation in Niamey available for El Hadj Saminou Dango, co-pilot of the project and ONAHA expert. Exchanges were also facilitated by subscribing to adapted, efficient tools: DropBox, Zoom.

The main limitation of stage 1 was the unevenness of the documentary material collected from the six WAIDMAs, both in terms of the number of documents contained in the inventory note, but also in terms of the themes concerned and the period covered. Despite a clear desire to compensate for certain gaps in

the collection by giving reminders to the WAIDMAs concerned, deliverable L1 had to be submitted in order to limit slippage in the timetable.

2.3 In relation to the comparative analysis

At the beginning of stage 2 and considering the increasing production requirements, a team meeting was held on the working principles between the consortium's experts, the CEs and the focal points, concerning: the concerted definition of tasks and responsibilities per activity; compliance with work deadlines, and; the definition of each person's support needs.

Despite the conditions created to facilitate the WAIDMA experts' involvement, two main difficulties were noted during stage 2:

1. limited mobilisation of some FPs, restricting the information available and not allowing validation of the outputs for two of the six WAIDMAs[1];
2. delays in the implementation of activities creating a cumulative slippage in the schedule of about 2.5 months and difficulties in internal reorganisation.

Collaboration with the ROA-SAGI facilitator and the members of COSTEA's Permanent Technical Secretariat enabled reminders to be given to the WAIDMAs through their legal representatives. Despite firm commitments from the FPs, few inputs were obtained.

The main limitation was the sometimes subjective view of the CEs on their own WAIDMA and on the others. Trios of contributors were formed enabling views to be exchanged in order to attenuate certain somewhat caricatural elements. Nevertheless, the comparative analysis would have benefited from being based on more material and a more representative sample of situations.

2.4 In relation to the in-depth diagnosis

The diagnoses were carried out in a reduced number of days, in particular due to difficulties in grouping arrivals and departures from/to France and the other countries of origin of the CEs.

In this context, the time devoted to field investigations was restricted. The main limitations were: the absence of individual meetings with producers, and; the absence of visits to certain hydro-agricultural schemes experiencing other realities but that were too far away.

It should be noted that the logistical and organisational support of the WAIDMAs hosting the mission and the unfailing involvement of the contributors concerned enabled a more efficient diagnosis with a high daily visit rate to a number of hydro-agricultural schemes and IAs.

Finally, the findings and analyses presented in deliverables L3a, L3b and L3c could not be based on a monographic type of diagnostic work based on a representative sample, but rather on qualitative work involving the identification of points of interest by a multidisciplinary team with complementary experience.

3. SUMMARY OF THE RESULTS

3.1 Presentation of the WAIDMAs and of the actors met

The map (see Figure 1) below depicts:

- all of the WAIDMA stakeholders in the management transfer study;
- the WAIDMAs that were the subject of field diagnoses (in red and black) as well as those that were only been addressed based on documentation (in yellow);
- the location of the head offices of the WAIDMAs (in red or yellow surrounded by black);
- the location of the zones of irrigated schemes and IAs that were visited or met (in black). It should be noted that the black points on the map represent a 'zone' rather than a 'point', covering several irrigated schemes and not just one.

Two main types of actor were met during the fieldworks:

- **Actors with direct responsibilities in the management and operation of irrigated schemes:** these are mainly IAs, WAIDMAs and institutions in charge of supporting them where they exist.
- **Actors belonging to the irrigation ecosystem[2]:** these include, for example, PARIIS and Bagrépôle met in Burkina Faso, but also governors and federations of producers in the case of Niger.

The following diagram (see Figure 2) presents the actors met[3] according to the typology presented above.

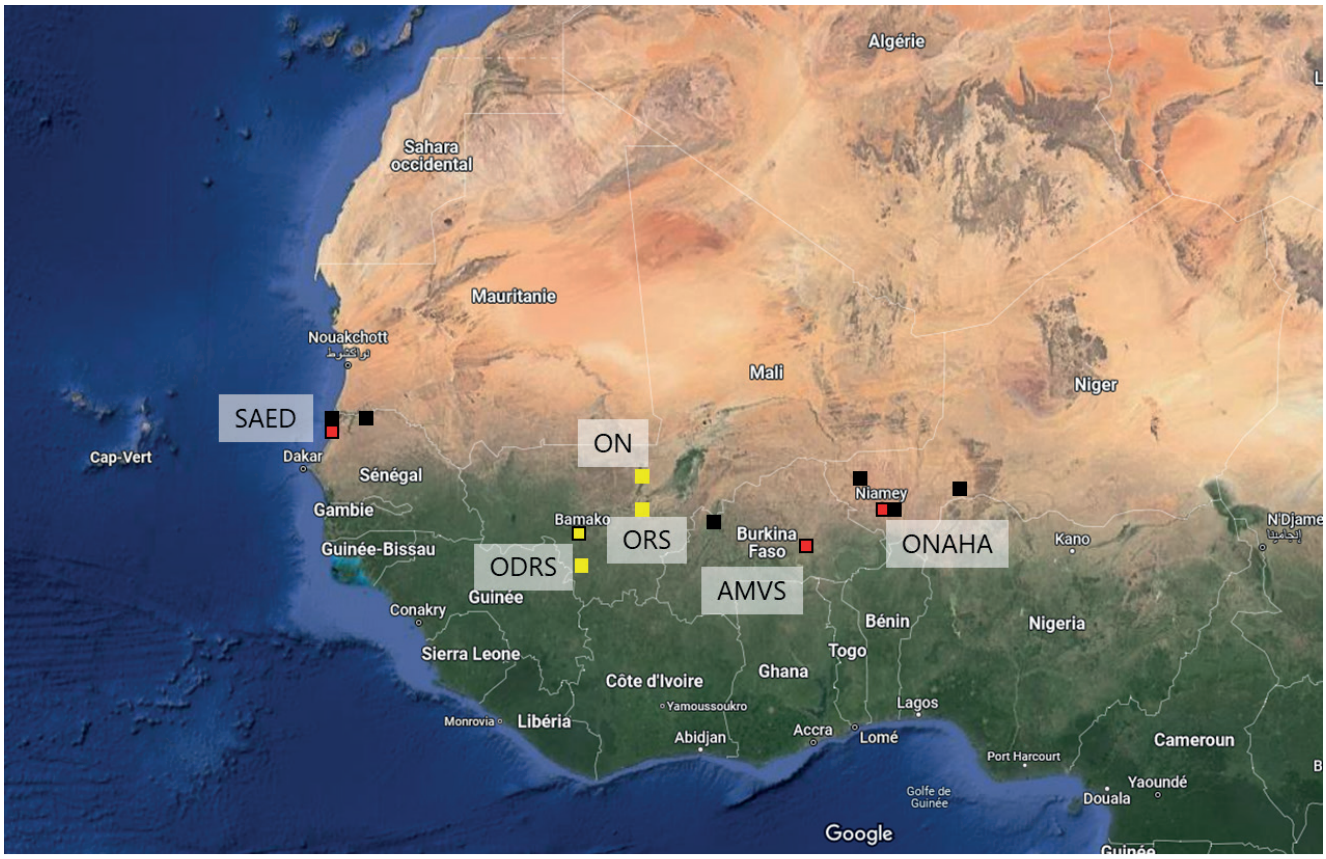
In order to understand the roles and responsibilities of the actors met, the following diagram (see Figure 3) presents the institutions in charge of supporting IAs according to the function that the latter must assume.

3.2 Presentation of the main results

The main results are presented taking up the major themes that fuelled the team's thinking throughout the project and that structured the discussions during the ROA-SAGI workshop in Saly.

1. ON and ODRS.
2. The notion of irrigation ecosystem includes all the actors that have an indirect role in the management and/or development of irrigated areas and thus contribute to the institutional and technical sustainability of irrigation. The functions of these actors are not necessarily limited to the irrigation sub-sector.
3. As the diagram only includes the actors met during the field diagnosis missions, it does not aim to describe all the stakeholders involved in the management of IAs and the irrigated schemes that are transferred to them.

Figure 1: Location of the WAIDMA stakeholders in the study and of the main sites visited or not during the field diagnoses of stage 3



- Location of the schemes visited
- Head office of the WAIDMAs visited
- Location of the schemes not visited but included in the diagnosis
- Head office of the WAIDMAs not visited but included in the diagnosis

Figure 2: Presentation of the actors met during the field visits

	AMVS	ONAHA	SAED
Actors directly involved in the management of the irrigated schemes and IAs	COOPERATIVES AWUOS (IRRIGATORS' ASSOCIATIONS) CATG (ICDE consultancy firm)	COOPERATIVES IWUAS (IRRIGATORS' ASSOCIATIONS) THE FEDERATION OF UNIONS OF RICE PRODUCERS' COOPERATIVES (FUCOPRI)	HYDRAULIC UNIONS (IRRIGATORS' ASSOCIATION) FÉDÉRATION DES PÉRIMÈTRES AUTOGÉRÉS CIRIZ CGER
Actors in the irrigation ecosystem	Bagré Pôle CILSS	Governors DRGR INRAN	CIFA LBA Insurance ISRA Africa Rice

Figure 3: Presentation of the actors met according to their role of support to IAs based on the functions identified

	AMVS	ONAHA	SAED
Structuring work	AMVS	ONAHA	SAED
Design	AMVS	ONAHA	SAED
Decision making	AMVS	ONAHA	SAED - AGRICULTURAL COUNCIL
O&M	Electromechanical engineer (hired)	ONAHA	SAED - DAM and DAGEE Maintenance fund
Admin. and fin. management	Accountant (hired)	ONAHA	CGER
Agricultural inputs	AMVS	CAIMA FUCOPRI	SAED -AGRICULTURAL COUNCIL CGER FPA Insurance Agricultural council
Agricultural production	AMVS	ONAHA	
Agricultural outlets	AMVS	RINI FUCROPI	CIRIZ
Training and R&D	CATG (ICDE consultancy firm)	INRAN	CIFA ISRA, Africa Rice

Mechanisms/phasing of the transfer

The study focused on six WAIDMAs in four different countries and transfer contexts. The processes and timeframes varied, but the first stages of the analysis allowed us to identify common milestones and a modal trajectory.

The main common milestones are illustrated in the figure 4 below:

- centralised management by the WAIDMA to meet the challenges of agricultural production and food security (green);
- creation of institutions for the collective management of irrigated schemes (cooperatives, IAs, etc.) (blue);
- promotion of private investment, with a focus on poles, public-private partnerships (PPP) (brown);
- decentralisation dynamics and a growing role of local authorities in the management of irrigated areas (grey).

This shows that the major difference between the WAIDMAs is above all linked to developments in the national contexts and the stage at which the WAIDMA is currently at.

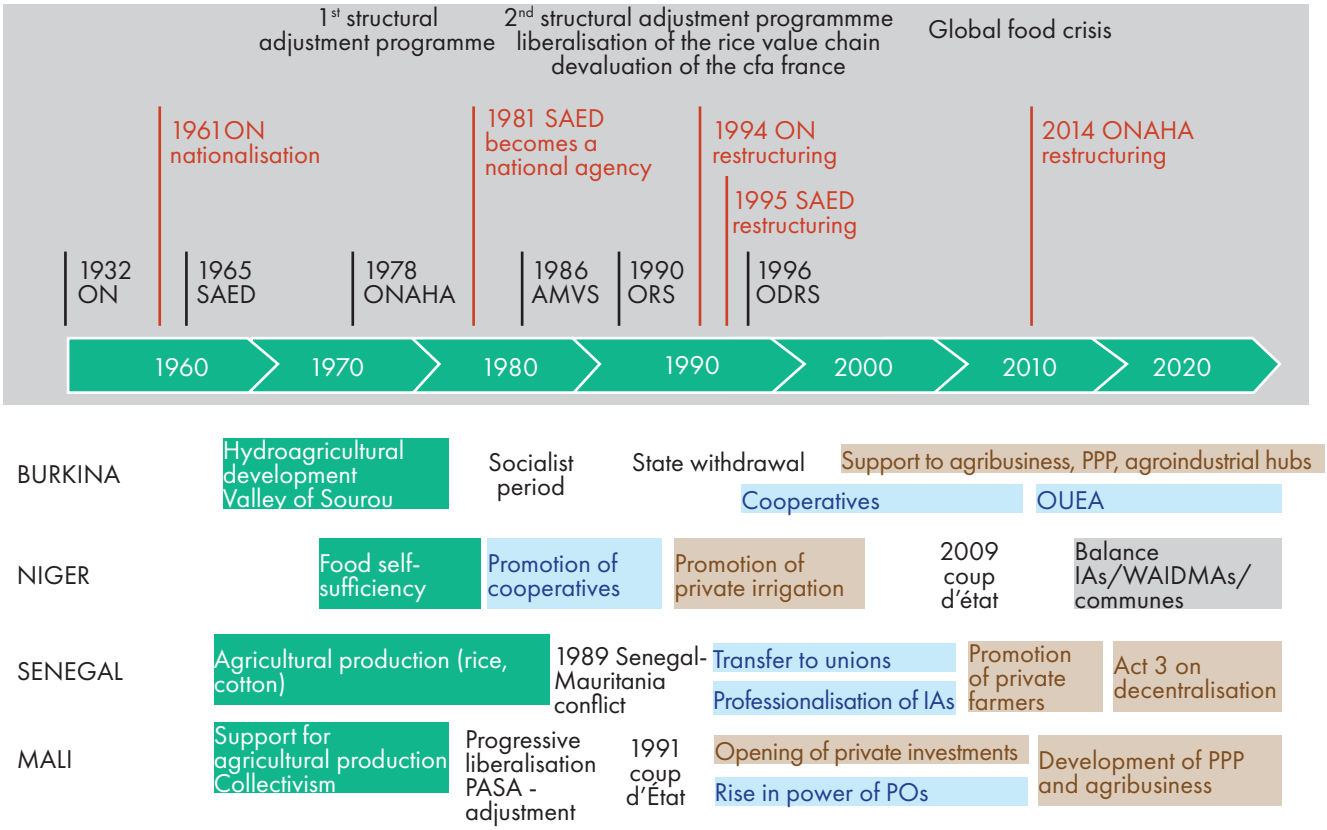
The diachronic analysis of the transfer highlighted the key role of the main **historical periods and the underlying paradigms** in explaining the major common features of the evolution of the WAIDMAs. The oldest WAIDMAs (ON, SAED) were marked by the post-colonial period where the planning State took the means to invest in irrigation for small-scale farmers. This was followed by a phase of disinvestment and concentration of the WAIDMAs in the functions of project ownership with the abandonment of their commercial activities. These phases of readjustment and reform were of varying lengths and some WAIDMAs are still undergoing major structural changes (e.g. modification of the statutes of AMVS which became Sourou Pôle during the study). Finally, the more recent period (2000s) is marked by the arrival of new funds for the irrigation sector from donors such as the World Bank, AFD or Saudi and Asian funds.

The management transfer, initiated during the State's disinvestment phase, **was not carried out in a homogeneous manner between the WAIDMAs and continues to develop over time**. A common point among the WAIDMAs during this period was the lack of preparation of all of the stakeholders to take on their new responsibilities. Nowadays, the management transfer is often accompanied by training programmes to strengthen the management capacities of IA offices, sometimes with financial support (setting up a working capital fund to enable the IA to start the first season) and structured support services through networks of agricultural advisers employed by the WAIDMAs or service providers.

Tracing the history of the WAIDMAs reveals an initial phase in which the management transfer was suffered by the actors due to a lack of anticipation and preparation, and where the first attempts at transfer lacked consistency. In the 1990s, in response to instructions from the Bretton Woods institutions, AMVS, ON and SAED completely disengaged from the management of hydro-agricultural developments. The principle was: 'as soon as it is completed or rehabilitated, transfer it'; the producers' involvement was perhaps insufficient, as was their awareness of the extent of the responsibilities entrusted to them. The WAIDMAs still bear witness to the questioning that this involved: both by the WAIDMAs, with their vertical and interventionist mode of governance, and by some producers used to receiving close supervision and worried about having to manage degraded infrastructures.

One of the criteria that seems to have been best taken into account is the **need to transfer a facility in good condition**. All of the actors are now aware that transfer can only take place

Figure 4: Schematic diagram of the different stages of transfer within the WAIDMAs in relation to changes in the national context



on a scheme that is in good working order. Whether it is a new or rehabilitated facility, the IA thus has a few years to become fully functional and to set aside the necessary funds before the first major maintenance is required. Some WAIDMAs, such as ONAHA and AMVS, have therefore undertaken exhaustive diagnoses of the state of their infrastructures.

The transfers have also required the establishment of documents clarifying the roles and responsibilities of the stakeholders. These are usually set out in the concession contracts that exist in all of the WAIDMAs.

In the course of the transfer process, **new institutions have been created** to specialise in an aspect of support to IAs. SAED seems to have gone the furthest in this direction with the creation of the Centre de Gestion et d'Economie Rurale (CGER, Centre of Rural Management and Economics) and the Centre Interprofessionnel de Formation aux métiers de l'Agriculture (CIFA, Interprofessional Training Centre for Agricultural Occupations), and close collaboration with La Banque Agricole (LBA, the Agricultural Bank of Senegal, former CNCAS). Specific departments have been set up within the WAIDMAs, such as the autonomous maintenance department at SAED and the technical department specialised in pumping equipment maintenance at ONAHA, in order to better structure the support and guarantee the necessary technical level.

The WAIDMAs have conducted a number of **experiments in transferring management to IAs in pilot areas**. The table 3 below lists some of the experiments carried out by the WAIDMAs, which were then used to improve the arrangements for transferring management to IAs.

Most of the WAIDMAs provide **advisory support to producers**. The aim is to ensure that optimisation practices comply with the provisions of the contracts or specifications signed at the time of transfer, in particular, as recalled at ONAHA, to 'ensure the preservation of the hydro-agricultural heritage and the achievement of producers' objectives of food and economic security'. Even within the framework of transfer contracts (SAED, ONAHA, AMVS), **the IAs have usufruct rather than ownership rights over the developed schemes**.

There are nevertheless differences in the way this takes place: from quantitative monitoring of cultivated areas (i.e. seasonal results, etc.), to advisory support for producers. For example, ONAHA positions itself as a service provider for IAs, while ORS provides agronomic training and training on plot irrigation methods. SAED has outsourced training functions and created CIFA, an association managed with producers to ensure continuing training on all the topics that so require, such as management, governance, agronomy, etc. AMVS, for its part, has set up the Centre d'Appui Technique et de Gestion (CATG, Technical and Management Support Centre) for the implementation of the support measures component of the MCA project. In actual fact, CATG was entrusted to the ICDE consultancy firm and when MCA funding came to an end, it became less operational due to a lack of own funding.

Functions transferred to IAs

During the study, different functions were identified as being essential to ensure the success of irrigated agriculture development projects. The transfer of these functions has varied over time with, for example, some WAIDMAs retrieving certain functions after

Table 3: Summary description of the main examples of transfer experimentation identified in the WAIDMAs

WAIDMA	AMVS	ONAHA	SAED	ON	ORS
Subject of the experiment	Definition of the functions that can be taken on by IAs	Identification of the structure capable of managing water	WAIDMA-User contracts for the management/maintenance of schemes by producers	Management of tertiary canals by private parties	Transfer of part of a plot to producers
Description, significant experiences	Transfer of all tasks to the IAs -> Management too complex Clarification of roles between water management and development management	Test: water management officers (EU-funded) -> increase in charges Test: 1 private/1 public (WB-funded) -> Difficulty with the private party Test: outsourcing management to an Agricultural Water Users' Association (AWUA) (WB-funded) -> Conclusive	Thilene, Pont Gendarme, Thiagar pilot from 1991-1994 Creation of the Federation of Self-Managed Perimeters (composed of 8 unions) in the Delta Evolution of village associations into Economic Interest Groupings (EIGs), possibly integrating village sections	Insertion of private parties in the Mbéwani plot Completion of terminal facilities by the farmers who have been allocated plots (choice of equipment)	Partnership for the transfer of a 50 ha scheme with innovative support by the non-governmental organisation (NGO) GADB
Model selected	Creation of Agricultural Water Users' Organisations (AWUOs, French abbreviation: OUEA) focused on water management (infrastructure and equity)	Water management entrusted to Irrigation Water Users' Associations with WAIDMA and commune control	Creation of EIGs integrated into a Union with a concession contract and support from the CGERs and indirect control of good management by the LBA, local authorities and the WAIDMA	Independent water management from the tertiary level	Delegation of management to a producers' association with support from an NGO
Scale of dissemination of lessons learned on the transfer	AMVS zone (16 pilot AWUOs) Bagrépôle Country (national strategy for the maintenance of hydro-agricultural facilities)	ONAHA zone after reform (success for 8/25 AWUAs)	Senegal River Valley	ON zone (Alatona/ Millenium Challenge Account [MCA]) ODRS AMVS	Schemes located in other flood recession sections, ORS

the IAs had failed to take ownership of them. The diagram below (see Figure 5) is generic and varies slightly from one WAIDMA to another, but it gives a general idea of the different functions and who is responsible for them.

The gradual transfer of management functions has relied on texts aimed at regulating all activities transferred to IAs. Concession contracts were drafted and signed between the parties involved. User and O&M manuals exist, such as the Management and Maintenance Note (MMN) in the case of SAED.

However, the conservation and the transmission of these documents to newly elected IA members, but above all their application, are constant challenges, as is their continuous updating.

Their application can be limited due to a lack of financial resources or technical skills.

Factors of financial unsustainability

Agricultural water pricing

Determining the break-even point for agricultural water requires **setting a fee rate that allows the IA to meet O&M costs without placing too great a financial constraint** on the farmers for the start of the season. This aspect of pricing is essential to ensure the financial balance of IAs.

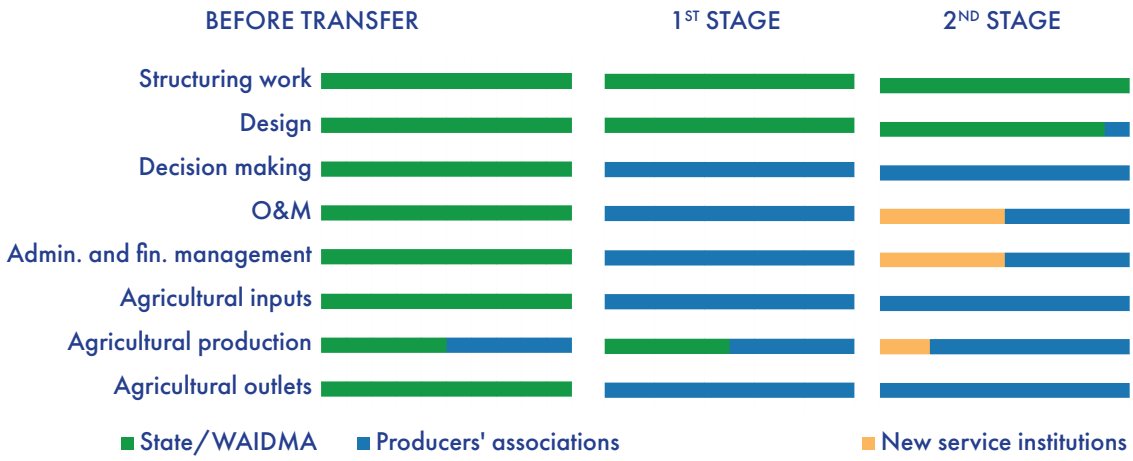
Some WAIDMAs have fixed fee rates, adapted by season and type of crop, and applied to all irrigated areas (e.g. the ON). In other cases, where the IAs are more autonomous, the WAIDMAs only have an advisory role, leaving the users to vote in a general assembly to set the fee rate applied by the IA.

In the latter case, the main difficulties are:
(i) the lack of training on how to calculate fees;
(ii) inaccuracies in the estimation of O&M costs at the beginning of the season, especially in cases of poor operational management, which leads to high variability in operating costs;
(iii) the reluctance of irrigators to vote for rate increases even if they are justified.

To overcome these difficulties, SAED, for example, put in place an MMN drawn up with the works company and handed over to the IA at the time of the management transfer. The MMN defines the unit costs of the operation and maintenance operations and their frequency, and makes it possible to calculate the cost of water per season to cover these expenses. A campaign to update these MMNs was conducted in 2016-2017.

The water tariff proposed in the MMNs as well as its distribution key (breakdown between the four main items of expenditure) are indicative but based on technical realities. However, the IAs are free to negotiate with the members to revise the price of the fee.

Figure 5: Schematic diagram of the gradual transfer of the different management functions



The difficulty of IAs to reach financial break-even can also be accentuated by an inadequate design of hydro-agricultural facilities. When the infrastructures are very technically complex, it becomes difficult to cover O&M costs by the irrigators' contributions and fees alone. This is the case, for example, in some ONAHA schemes that have large flood protection dykes or that are supplied by floating electric pumps with poorly mastered technology. The gradual deterioration of the structures is then inevitable, resulting in lower production and a worsening of the IAs' financial situation.

The tendency for farmers to become indebted

Over the course of this project, several aggravating factors were identified among the six WAIDMAs. In particular, there are deficit seasons when production is not sufficient to cover operating costs. This situation arises because structurally, the added value of cereals is very low per unit of surface area and the slightest climatic, financial or other hazard makes it impossible to repay seasonal loans. The most alarming case was observed at ONAHA following the flooding of the River Niger, which destroyed all harvests and heavily penalised the cooperatives that had pre-financed the agricultural inputs.

We emphasise the **structural dimension of the indebtedness of farms**, whereby the results of good years does not cover bad years.

Rather than giving up their production, the farmers turn to external resources to launch the next season and get into debt. For example, an IA met in the SAED zone (Podor delegation) had resorted to private moneylenders due to a failure to re-establish trust with banks and other credit institutions. The repayment deadlines for such loans generally lead farmers to sell their produce quickly at field side knock-down prices. Thus begins a vicious cycle at the individual level through the creation of production and irrigation debts. This situation has repercussions on the collective when the farmer can no longer pay the fees to the IA. Indeed, some WAIDMAs, such as SAED, have set up collective guarantee systems whereby if the full debt of a collective (the EIG, for example) is not honoured, the entire collective no longer has access to the next seasonal loan.

This reality raises the question of the technico-economic model of agricultural production in irrigated areas and its long-term sustainability.

Added value can be improved by:

- better valorisation of produce thanks to better-structured value chains;
- a reduction in post-harvest losses, which requires better monitoring;
- a better evaluation of production costs and consideration of the very high dependence on imported and very expensive inputs.

Indeed, to date, post-harvest and technico-economic profitability issues seem to be poorly known or documented: the IAs met in Niger, Senegal and Burkina Faso know little about post-harvest losses, yet this is an important lever to significantly improve the overall profitability of irrigated schemes without having to increase yields.

Diversification of IAs' activities

The question of the role of IAs on the agricultural production side has been widely discussed and debated. Historically, all of the organisations that managed the water service were also in charge of input supply and marketing. At ONAHA, the IA (Irrigation Water Users' Association [IWUA] French abbreviation: AUEI) carries out the management and maintenance of the hydromechanical structures and equipment as well as their renewal thanks to the water fee. Production management activities are entrusted to cooperative societies (SCOOPs) whose members are the same as the IA, and whose creation is more recent and not yet systematic. The prerogatives of the SCOOPs, whose water management functions have been transferred to the recent IWUAs, concern the management of inputs, the monitoring of seasons and marketing support. This separation is recent and leads the irrigator to be a member of both the IWUA (for water) and the SCOOP (for fertilisers, etc.). This is also the case for AMVS.

In the case of SAED, for example, the IAs are moving towards a concentration of both activities (water management and production), whereas their initial mandate was only for water. Precautions are taken, for example, to distinguish between marketing and public service activities in the IAs' accounts, but these safeguards do not seem to be sufficient, and there are significant risks that expenditure related to marketing activity will be deducted from the provisions for replacing pumping equipment. This is a very topical issue and the WAIDMAs are seeking to take a stance in relation to this escalating dynamic.

Governance of IAs

In both AMVS and ONAHA, it is explicitly stated that any person with a right to farm one or several plots located within the scheme of an IA is automatically a member thereof.

Among the framework documents available, the standard statutes of IAs in the ONAHA zone are the most precise concerning the rights and duties of members. They provide a solid basis for establishing the governance of the transferred hydro-agricultural facilities by specifying how each individual can participate in and be informed about collective decisions (see table below).

The statutes of IAs in the SAED zone are, for their part, supplemented by 'books' developed by the CGERs that specify all the procedures for the proper management of IAs and, in particular, for the proper management of funds.

Table 4: Rights of IA members under ONAHA

Dimensions of good governance	Examples of rights granted to members
Representation	Elect and be elected to the bodies of the IWUA
Active participation in collective decision-making	Propose agenda items for discussion at General Assembly meetings
Transparent information	Be provided, on request, with a copy of the statutes and internal regulations of the IWUA Have access to consult the technical, administrative and financial files of the IWUA in order to inquire about the actions carried out in the general interest of the members
Redress and fair compensation	Complain to the IWUA office in case of dissatisfaction with the services provided Receive compensation in the event of damage caused to them by the IWUA

Within the IAs, other texts govern the relations between irrigators' associations and members, such as the statutes of the associations. Nevertheless, in most cases, their application is made difficult by the social and even family ties that exist between the members of the IA boards and the farmers. Since the board members are themselves farmers, it can be difficult to decide to withdraw a plot if a farmer has not honoured his commitments.

The examples of WAIDMAs show that this situation arises above all in village irrigated schemes (VISs), where the farmers are all from the same village. However, it can also be observed in larger schemes, despite the sometimes greater social distances between farmers, which demonstrates the structural issue of governance within IAs.

The failure of any member to respect his/her duties towards the IA and of the IA towards each of its members has concrete effects: lack of water in canals, absence of ordinary or extraordinary meetings, presumptions of misappropriation, less than 80% of fees paid, little or no turnover of leaders at the head of the associations, etc. These are all indicators of poor governance which should constitute 'warnings' for WAIDMAs.

4. RECOMMENDATIONS

4.1 Ensuring that a framework that legitimises the transfer is in place

The guarantee of political will and legal framework

It is necessary to clarify the objectives of the transfer and to translate them into quantitative and qualitative indicators to be monitored. All actors need support during this transfer process, particularly the WAIDMAs. The legislative and regulatory framework in which a WAIDMA is established reflects the State's will to conduct major shifts in paradigm. This desire demonstrated by the public authorities to make producers more responsible is a key to success since it guarantees, at least in theory, the State's involvement in supporting the process by giving WAIDMAs the role of delegated project owners to ensure the necessary support for IAs as part of their missions.

The fact that the infrastructures remain the property of the State seems to be a central point of the transfer policy. This provision is clearly transcribed in the concession and transfer contracts. It provides the WAIDMAs with the necessary legitimacy to monitor the operating and maintenance conditions of the investments by the IAs and to support their professionalisation. It should be noted that in the AMVS and ONAHA zones, developed schemes are registered as land titles in the name of the State.

Adaptation of texts and statutes for IAs

The objectives of the transfer must be defined in consultation with the IAs and periodically reviewed to adapt them to the new context.

Real participation of irrigators from the design phase of the facilities

The IAs need to be involved from the construction/rehabilitation of the facilities to encourage ownership. The transfer process has been carried out after a pilot phase (in the cases of SAED and AMVS) which has enabled the launch of a rehabilitation phase, then systematic transfer of the hydro-agricultural facilities developed. The pilot phase made it possible to establish conditions for dialogue with the IAs and to better assess their capacity to fulfil their missions. Yet such participation, although necessary, seems difficult to achieve. For example, during works, in all the WAIDMAs studied, the firms are reluctant to take on board the opinions of the future beneficiaries despite the establishment of

joint monitoring committees. The WAIDMA staff in charge of work design plans and monitoring files within planning or infrastructure departments (different names depending on the WAIDMA) still often consider themselves to be the exclusive holders of technical knowledge. This stance leaves little room for discussion with producers, who are considered to be insufficiently equipped to understand the ins and outs of the technical options adopted.

4.2 Understanding that the transfer process is dynamic, with feedback and adaptation, rather than linear

Improving internal governance

- Renewal of one-third of the oldest members, limitation of terms of office and of overlapping;
- Selection of board members from capable producers in accordance with the OHADA Uniform Act;
- Adaptation of texts;
- Dissemination of information (keeping records and general assemblies).

Among the factors having led to transfer difficulties in the situations studied, we note:

- the low level of instruction of the IA members which is a risk for organisation and an obstacle to their professionalisation;
- conflicts within cooperatives between leaders and other cooperative members;
- difficulty in enforcing compliance with the terms of the internal regulations and statutes, especially the renewal of bodies, which is nonetheless an essential factor for the stable and legitimate organisation of the IAs.

There is an absence of a long-term monitoring and evaluation system for the proper application of the contractual documents (concession contracts, framework contracts, specifications or responsibility charter), with the resultant shortcomings in enforcement and ad hoc support mechanisms for IAs in difficulty.

Without such a long-term system (i.e. that continues beyond project completion, whether internalised by the WAIDMA or outsourced), it is difficult to have a precise analysis of the evolution of the 'IA landscape' in a WAIDMA, and therefore to adapt the advisory and support system accordingly. The role of the Faranfasi-So centres at the ON or of the CGERs at SAED is essential in monitoring IAs, but their prerogatives do not allow them to assess the functionality of the IAs for each of the missions transferred to them. The issue **is to obtain feedback that is useful for the learning process for the WAIDMA-IA tandem** in order to improve the conditions for implementing the transfer.

Adapting WAIDMAs' methods for monitoring IAs over time

- At the beginning: intensive support focused on new IAs;
- then: the WAIDMA has an observer/supervisory role when the producers have the capacity and the ecosystem is mature (see 3.1 above);
- option: return to intensive support on a case-by-case basis (IA in crisis situation).

In some WAIDMA areas, such as ONAHA and the ON, the transfer process involved a co-management phase between the IAs and the WAIDMA. In all cases, however, the search for greater autonomy of the IAs prompted the WAIDMAs to support the IAs to be staffed with the necessary skills to carry out activities related to the water service - as in the case of AMVS, or the emergence of service centres and associative or private service providers who could support the IAs in jobs that were too specific to be internalised (e.g. electromechanics, accounting, etc.), as in the case of SAED.

Expectations in terms of autonomous administrative and financial management and, more broadly, decision-making by the IAs, need to be adapted to the political will and maturity of the IAs in each WAIDMA. One of the challenges is to define the most appropriate system to support the IAs as they build their capacity, from their creation until they are truly capable of managing the hydro-agricultural facility on their own.

4.3 Meeting the conditions for irrigators' associations to be viable

Securing IAs' financial resources

- Financial management that respects budget planning;
- Mainstreaming term deposits, but with safeguards for their use.

The financial situation of the IAs should be compared with the technical and economic performance of the existing production systems, which are essentially based on rice cultivation. The points studied and analysed highlight the structural nature of the financial inefficiency and of the current production systems, particularly in the SAED zone but also in the ONAHA and AMVS zones.

Our project thus stresses the **need to better rethink the overall economic efficiency of irrigated systems** in order to break the spiral of producers' indebtedness by more sustainable means than the periodic debt write-offs of IAs by the State and/or agricultural credit banks.

These technico-economic performance issues could be an important explanatory factor for the wide variations observed in indicators such as the intensification rate. **Crop diversification, both as a lever for improving environmental performance and for creating added value, could be an interesting avenue to explore**.

At the level of the IAs, specific improvements in the sustainability of hydro-agricultural infrastructures over time can be observed when term deposit accounts are set up. The experience of SAED deserves to be shared, as this system allows IAs to set aside

resources to deal with occasional unforeseen events or a series of more difficult seasons. The role played by the agricultural bank in controlling the finances of IAs could also serve as a reference.

Expectations in terms of autonomous administrative and financial management by the IAs need to be adapted to the political will and maturity of the IAs in each WAIDMA. One of the challenges is to define the most appropriate system for supporting the IAs as they build their capacity, from the time they are created until they are truly capable of managing the hydro-agricultural development on their own.

5. CONTRIBUTING TO A COLLECTIVE LEARNING DYNAMIC WITHIN ROA-SAGI

As indicated in the section on method, the involvement of WAIDMA CEs as members in their own right of the team in charge of the project was an important innovation of the WAIDMA SA under COSTEA 2. The Transfer project, the first to be launched at the beginning of 2020, therefore endeavoured to make this innovation operational. This section looks back at some of the difficulties encountered and how the adaptations made in the project's implementation enabled the creation of a learning dynamic.

5.1 The limitations of written communication and a change of approach

At the start of the project, e-mail exchanges between the experts mobilised by the consortium and the WAIDMA CEs caused delays and required adjustments to the schedule (see above, section on difficulties encountered).

When stage 2 (comparative analysis), which required more outputs was launched, the team members took stock of these difficulties.

Indeed, the feedback on stages 0 and 1 showed the limits of such exchanges due to:

- limited reactivity on the part of the CEs due to often busy schedules, but which varied greatly from one WAIDMA to another and from one period to another;
- the difficulty of obtaining inputs from the FPs who were not paid;
- the difficulty of collecting the most relevant information due to misunderstandings that cannot be easily resolved in writing.

This resulted in:

- a greater effort in follow-up and reminders (high transaction costs and overuse of planned working days);
- low efficiency due to the multiplication of analysis and feedback stages on what had been produced;
- slippage in the timetable of programmed activities and, ultimately, in the delivery of reports to the Monitoring Committee.

It was decided as a team to redirect the methodological approach of the project by favouring oral discussions which have several advantages:

1. 100% involvement in the project during the meeting;
2. a statement of conclusions binding on all team members present;
3. a time to reflect collectively, strengthening team spirit;
4. the possibility for all of the participants to feed the debate with their own experiences and visions;
5. the guarantee of better ownership by the WAIDMA actors of the issues of the different stages of the project.

It was therefore decided to reactivate the discussion process by videoconference using the project meeting room via Zoom.

5.2 A committed collective learning process

Following the change of tack in methodology implemented in stage 2 (favouring videoconference discussions), it was decided to adopt a collective learning process.

Figure 6: Illustration of the process of building a community of practice

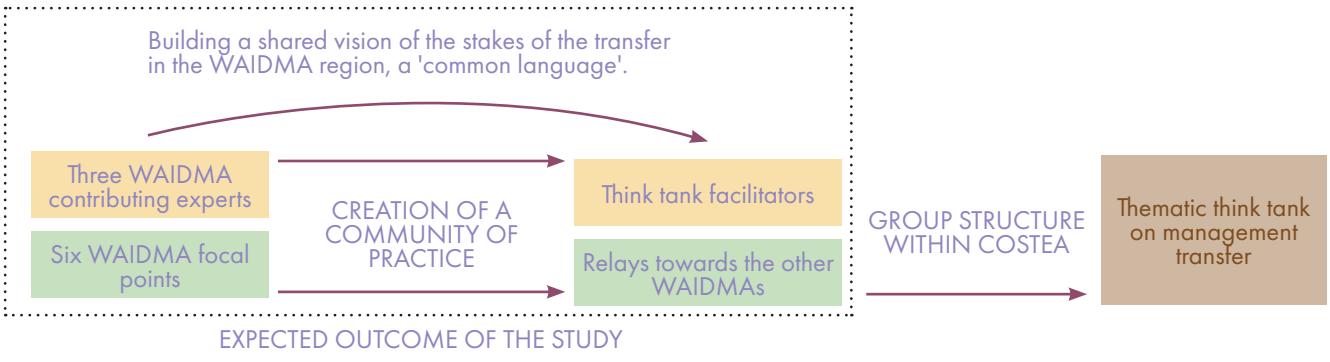
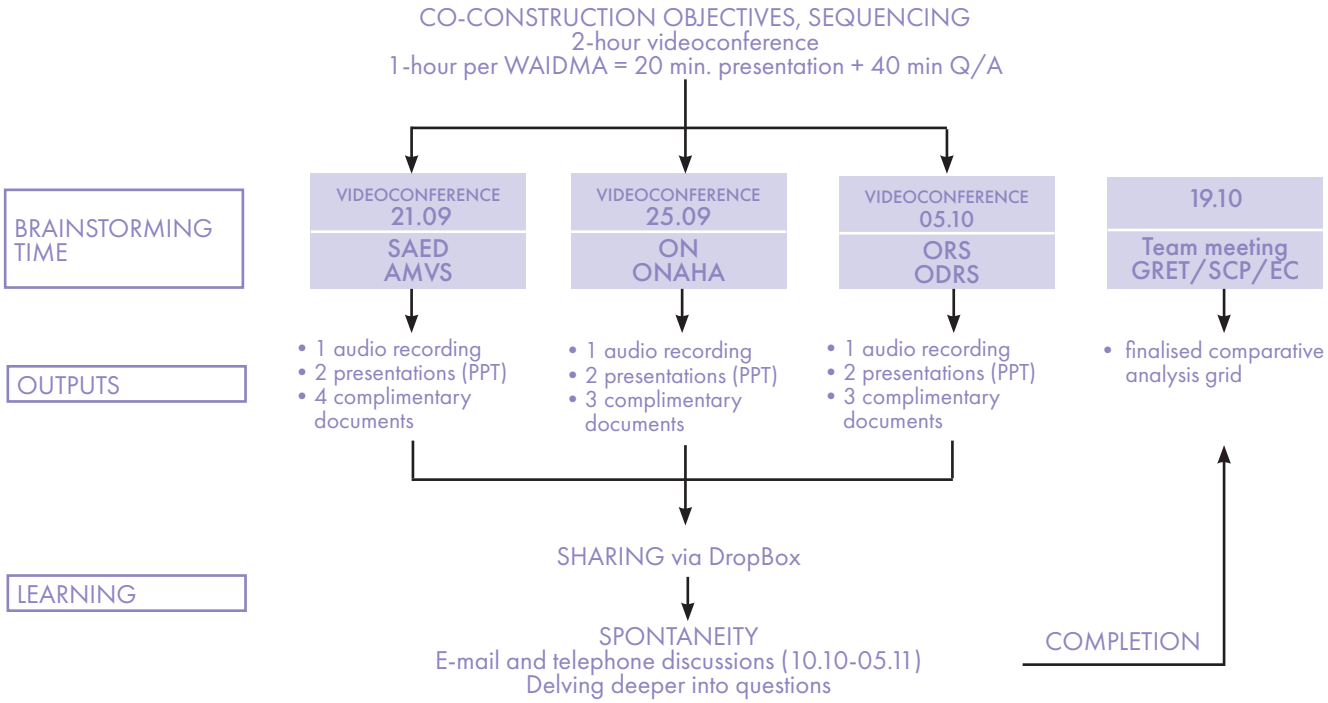


Figure 7: Diagram of the process of the 1st round of videoconferences



This was in line with the consortium's proposal to foster ownership by building a community of practice (Figure 6). By fostering links between the CEs and with the consortium's experts, the expected outcome was that this core of experts involved in the management transfer project could act as a basis for structuring a community of practice recognised for its expertise on the topic within ROA-SAGI and COSTEA.

5.3 Structuring the project around videoconferences

Several rounds of videoconferences were organised at pivotal moments of the project.

The consortium proposed to the CEs and FPs to launch a **first round of detailed presentation videoconferences** so that each expert (CEs and FPs) could present the theory and practice of transfer to IAs in their own WAIDMA.

This round of videoconferences was structured around three moments of interaction between the consortium's experts, the CEs and the FPs (10 people), as well as a team meeting (Figure 7).

The **following rounds allowed the production of deliverables to be improved**. During the videoconferences, the CEs and experts from the consortium could consolidate and fine-tune the analyses carried out in sub-groups. Thanks to the screen sharing function on Zoom, the team discussed and improved the content of each analysis by: (i) debating certain salient points; (ii) adding concrete examples from the WAIDMAs; and (iii) correcting the analysis where necessary.

5.4 Summary of the types of learning

The contributing experts expressed their opinions on the benefits of videoconferences (Table 5).

Table 5: Benefits of the videoconferences according to the contributing experts

Benefits identified	Opinions expressed by the contributing experts
Team building	- Creation of a collective dynamic - Moments of conviviality - Live interactions - Increase in the number of participants over the course of the videoconferences
Mutual understanding	- Enhanced knowledge of the WAIDMA experts (previously no idea of what was going on in any of the other WAIDMAs) - Exchanges of points of view - Developments in personal points of view
Facilitation of project management	- Easier monitoring of progress and blocking factors
Adaptation of the tool to the context	- Compensates for the absence of physical meetings - Flexible as it is possible to actively participate in the project while remaining in the WAIDMA - 2 hour format accepted by all participants

The different rounds of videoconference revealed two types of collective learning:

1. Cognitive learning:

- making available new information and data on the members of ROA-SAGI;
- involvement in methodological reflection on the implementation of the project and the organisation of the work (progress and blocking factors, adaptations);
- sharing perceptions on common issues.

2. Social learning (towards a community of practice):

- all of the experts meeting by videoconference (including from their phones in the field);
- strengthening of relations allowing each participant to freely contact other experts (e-mails, telephone, WhatsApp, etc.);
- possibility to discuss topics outside the project freely at the end of the session (flooding of schemes during the rainy season, difficulty in obtaining certified rice seed, etc.).

6. CONCLUSIONS

The diachronic analysis of the transfer highlighted the key role of the major **historical periods and of the underlying paradigms** in explaining the main common features in the development of the WAIDMAs. The oldest WAIDMAs (ON, SAED) have been marked by the post-colonial period where the planning State took the means to invest in irrigation for small-scale farmers. This was followed by a phase of disinvestment and concentration of the WAIDMAs on the functions of project management with the abandonment of their marketing activities. These phases of readjustment and reform were of varying lengths and some WAIDMAs are still plunged in uncertainty due to changes in statutes (this is the case of ONAHA and AMVS). Finally, the more recent period (2000s) is marked by the arrival of new funds for the irrigation sector from donors such as the World Bank, AFD or Saudi and Asian funds.

The management transfer, initiated during the State's disinvestment phase, **was not carried out in a homogeneous manner between the WAIDMAs and continues to develop over time**. A common point between the WAIDMAs during this period was the lack of preparation of all of the stakeholders to take on their new responsibilities. Nowadays, the management transfer is often accompanied by training courses for the IAs at the start, and sometimes with financial support (setting up a working capital fund to enable the IA to start the first season) and structured support services through networks of agricultural advisers employed by the WAIDMAs or service providers.

All of the WAIDMAs studied have **formalised roles and responsibilities to a good extent**, with the establishment of concession contracts or their equivalent, internal regulations to define the responsibilities of the IAs, and mission letters or objectives contracts with the State to define the role of the WAIDMA. One of the main difficulties highlighted in discussions with the CEs and FPs is **the State's failure to fulfil its own commitments, particularly in terms of providing mutual funds for maintenance** or for the WAIDMAs' own activities. In such cases, it is difficult to ask the other interested parties (IAs and WAIDMAs) to fulfil their commitments.

SAED has set up an **original shared governance structure with the creation of specific entities** to support all of the components under the responsibility of the IAs:

- Through its Autonomous Maintenance Department (DAM), the Maintenance and Management Note (MMN) attached to concession contracts, which specifies the O&M operations to be carried out, their frequency and costs, thus enabling the evaluation of water fees on a technical basis;
- A maintenance service through the DAM for infrastructures common to several irrigated schemes, known as 'structuring' infrastructures, and schemes with maintenance contracts that allow for emergency intervention;
- A network of agricultural advisors who work in the field with the Water and Environmental Planning and Management Division (DAGEE) to identify maintenance needs and prepare expressions of requirements (for access to agricultural loans);
- Long-term support through the mobilisation of CGERs to support the internal governance of IAs and administrative and financial management.

The strengths of this system are mainly:

- **making all parties responsible** for the success of the transfers;
- the **pooling of technical skills** within institutions capable of assuming the financial cost of these technicians (accountants within the CGERs, electromechanics at the DAM, rural engineering experts in the DAGEE, etc.). This makes it possible to solve many of the problems posed by the professionalisation of the IAs.

To date, **AMVS has taken steps in this direction** by: (i) encouraging IAs to hire technicians, such as electromechanics for the operation of the pumping stations or accountants; (ii) proposing the pooling of these skills among several IAs. The advantages of this system are the same as those mentioned above. In terms of disadvantages, we can mention the need for increased coordination between several IAs as well as the costs which remain higher than in the schema presented above.

ONAHA has set up significant dedicated support in order to regain control of the situation at the level of the IAs, which is considered dangerous for the preservation of the State's hydraulic heritage. This support is based on:

- a system of support for producers by ONAHA, described as permanent and close, and which is based on the scheme directors, heads of branches and regional directors. Each scheme has a director.
- the central role of ONAHA, which has been strengthened in particular for (i) the mobilisation of water resources (surface and underground) through the development of

hydro-agricultural facilities; (ii) the mobilisation of land resources by raising awareness on compensation procedures and support for the allocation of land after development; (iii) the enhancement of production (improvement of yields and quality, diversification of outlets, etc.).

For all the WAIDMAs, a crucial point that emerged from the discussions was the question of the design and creation of the hydro-agricultural developments. In particular, the users (IAs) **are insufficiently involved in designing and monitoring rehabilitation works (under WAIDMA project management), whereas it is they who will then take over the operation and maintenance**. The design choices that have an impact on O&M (technicality, practical difficulties, cost differences) are not sufficiently discussed with the main stakeholders who will subsequently assume responsibility for them. Indeed, it is not easy to take into account objectives and interests that may be divergent between the WAIDMAs and the IAs: sometimes it is in the WAIDMA's interest to increase the developed areas by reducing investment costs per hectare as much as possible, but at the same time increasing the O&M costs to be borne by the IAs (unlined canals, poorly compacted straddle areas, etc.).

Another point of attention in the study is the **absence of a mechanism for the rigorous and regular evaluation of the functionality of the IAs and for feedback**. Without such a permanent system (i.e. one that continues after projects are completed, whether within the WAIDMU or outsourced), it is difficult to have a precise analysis of how the transfer is evolving and to consequently adapt the advisory and support system.

Finally, **WAIDMAs pay special attention to agricultural enhancement** and specific training or support and monitoring mechanisms are in place. In particular, we can mention the: (i) quantitative monitoring of cultivated areas for all WAIDMAs; (ii) existence of an advisory support- network in all WAIDMAs; (iii) existence of agronomic and irrigation training at the plot level for some WAIDMAs, including ORS.

The qualitative elements that emerge suggest a **need to better rethink the overall economic efficiency of irrigated systems** in order to break the spirals of producers' indebtedness by more sustainable means than the periodic debt write-offs of IAs by agricultural credit banks.

These technico-economic performance issues could be an important explanatory factor for the strong variations observed in indicators such as the intensification rate. **Crop diversification, both as a lever for improving environmental performance and for creating added value, could be an interesting avenue to explore**.

Whatever the criteria for evaluating the success or failure of the transfer to IAs in each of the WAIDMAs of the West African Network, the ability to ensure stable production ultimately appears to be the keystone of the transfer system.