



# KEY MESSAGES AND RECOMMENDATIONS FROM COSTEA NETWORK MEMBERS TO STAKEHOLDERS IN THE SECTOR OF IRRIGATED AGRICULTURE

REPORT OF THE COSTEA SEMINAR IN MONTPELLIER

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**COSTEA**  
ENSEMBLE POUR RELEVER LES DÉFIS  
DE L'AGRICULTURE IRRIGUÉE

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## OBJECTIVE AND USE OF THIS DOCUMENT

This synthesis illustrates the main results of the activities of the COSTEA 2 feedback seminar held in Montpellier from 21 to 25 November 2022. The first part of the document summarises the final feedback on the four challenges and the 12 actions developed by COSTEA 2 (see diagram below). The exercise that led to this summary aimed to identify meta-messages on which there was consensus and that cut across the various actions of the project. Examples of how these messages relate to the actions to which they refer were formulated. Some of the meta-messages are linked to several challenges: indeed, these are cross-cutting conclusions which have led to the identification of shared recommendations.

This has resulted in possible directions for the continuation of COSTEA's work which form a basis for discussion for COSTEA's Scientific and Technical Committee.

For the actors of the sector, these meta-messages should be considered as entry points for the contextual analysis, the formulation or the evaluation of a project and/or irrigated territory.

The second part of the document reveals the main recommendations resulting from the participatory workshops that were organised as part of the seminar.

This diagram brings together the 12 actions developed by COSTEA 2 in relation to the four challenges faced by irrigated agriculture:

- 1/ Contributing to the economic and social development of irrigated territories;
- 2/ Strengthening the environmental sustainability of irrigated agriculture;
- 3/ Reducing risks and increasing the resilience of farmers and developments;
- 4/ Supporting change through technical and institutional innovation.

To meet these challenges, COSTEA mobilises a network of more than 450 experts from various countries and from different scientific and technical fields.

Organised into 12 thematic working groups, COSTEA has carried out different actions referred to as 'structuring actions':

- Promoting agroecological transitions in irrigated systems;
- Supporting the networking of West African Irrigation Development and Management Agencies;
- Managing irrigated land with a view to social, economic and environmental sustainability;
- Promoting the reuse of treated wastewater to reduce pressure on water resources;
- Developing and managing floodplains in a multifunctional perspective;
- Promoting the offer of technical, informational, organisational, institutional and commercial services to irrigators;
- Developing and managing valley bottoms and small floodplains in West Africa.

It has also carried out actions referred to as 'collaborative actions':

- Developing participatory territorial governance approaches;
- Managing groundwater sustainably;
- Promoting economic analyses adapted to irrigation projects;
- Promoting technical, economic, social and institutional innovations in irrigated systems;
- Quantifying the environmental and climatic impacts of irrigated rice cultivation.



## PART 1 : COSTEA META-MESSAGES IN RELATION TO THE FOUR CHALLENGES OF IRRIGATED AGRICULTURE

### Challenge 1: Contributing to the economic and social development of irrigated territories

#### OVERVIEW OF THIS CHALLENGE:

The development of irrigation and of hydro-agricultural schemes is a tool used by public authorities for territorial development. This development mobilises a great many actors: municipalities, institutions managing land tenure and use, institutions managing water use, agricultural consultants, management consultants, banks and financial intermediaries, and upstream and downstream value chain actors. In the agricultural sector, the development of irrigation and of hydro-agricultural schemes offers or strengthens employment, particularly in rural areas (agricultural production, upstream and downstream links to production) and can improve farmers' living conditions. However, the direct effects on employment and living conditions depend on the political and technical choices that are made: How should the irrigated system be anchored in its territory? Which types of farmers to develop the land? How should land and other natural resources, primarily water, be shared and what model of agricultural development should be adopted? What value can be added to agricultural production in the area?

Where appropriate and feasible, the private sector can also be involved in the field of irrigation through the establishment of public-private partnerships. These private actors then also contribute to economic development but it is important to clearly define the conditions for the use of common resources and the creation and sharing of wealth.

Finally, the economic actors, first and foremost the farmers, organise themselves and make arrangements in their territory in a web of more or less formal relationships with service providers and intermediaries for credit, the purchase of inputs and the sale of produce, with economic, social and environmental consequences that are difficult for public policies to grasp and support.

#### THE SUBJECTS ANALYSED IN RELATION TO THIS FIRST CHALLENGE WERE:

- The economic performance of irrigated systems (in all their diversity) and their social equity;
- The management of irrigated land;
- The conditions for development and wealth creation through irrigation via value chains;
- Investment and maintenance strategies for irrigation schemes;
- Conditions for the implementation of public-private partnerships and contractualisation;
- Arrangements and the informal economy in irrigated agriculture.

#### META-MESSAGES

With regard to the issues related to this first challenge, the following six meta-messages have been formulated, and illustrated by examples resulting from the structuring actions (SA) and collaborative actions (CA) carried out in the framework of COSTEA 2:

#### • Set up a comprehensive service ecosystem

*Service provision cannot be left to the private sector alone, public intervention plays a fundamental role in defining a comprehensive ecosystem of services, going beyond the sole supply of water to farmers. This ecosystem is articulated at different micro, meso and macro levels that are mutually reinforcing.'* (SA services to irrigators)

*'An ecosystem of services must also help to support the processes of transferring management to irrigators' associations.'* (SA WAIDMA transfer)

#### • Co-construct a long-term consultation process

*'The management of agricultural water and the development of hydro-agricultural infrastructures should be designed progressively through a consultation process based on a territorial coordination system. This means involving the stakeholders of the territory, from all sectors of activity, in an iterative process of participation and consultation. Co-decision roots projects in a shared territorial dynamic, reducing the risks of disconnection and inconsistency with local realities.'* (CA territorial approach)

#### • Take into account the multifunctionality of the area and the multiple uses of the resource

*'Projects for the development and management of floodplains should be rethought from the perspective of the multifunctionality of the area. The notions of diversity of resources and uses should take precedence over those of optimisation and intensification.'* (SA floodplains)

*'Investments in irrigation tend to accentuate the process of privatisation of common resources and to weaken the multifunctionality of ecosystems from which the most vulnerable households benefit.'* (SA land tenure in South-East Asia)

#### • Strengthen the sustainability of farms

*'Securing land, matching services to irrigators' needs and reducing their operating costs are fundamental prerequisites to strengthen the sustainability of farms'* (SA land tenure, SA services to irrigators and agroecology)

*'The socio-economic and agri-environmental performance of agroecological practices is encouraging.'* (SA agroecology)

*'New methods of crop intensification need to be considered, while guaranteeing their environmental sustainability and compatibility with farmers' strategies.'* (SA valley bottoms)

• **Reaffirm the essential role of the managers of large irrigation schemes**

*'West African Irrigation Development and Management Agencies (WAIDMAs) should be at the service of producers to support the qualitative and quantitative development of value chains towards more efficient, sustainable and resilient agriculture. Their role as facilitators of dialogue and market access is therefore crucial.'* (SA WAIDMA value chain)

*'The sharing of responsibilities in the process of transferring the management of part of the infrastructures built by WAIDMAs with public funds to irrigators' associations (IAs) requires constant supervision by the WAIDMAs. Objective and constructive dialogue between the WAIDMAs and IAs is the basis for this cooperation.'* (SA WAIDMA transfer)

• **Systematically use economic analysis for the design and implementation of viable and sustainable irrigation projects**

*'Ex-ante economic analysis needs to be included in an iterative process that integrates the different project dimensions to make it a tool for designing viable and sustainable irrigation projects.'* (CA economic analysis)

PROSPECTS AND AVENUES PROPOSED FOR THE CONTINUATION OF COSTEA'S WORK:

- Disseminate the diagnostic methodology proposed by the 'services to irrigators' structuring action (i.e. Policy Brief) so that it can be easily replicated in other study areas.
- Support WAIDMAs individually so that they take ownership of and implement the recommendations of the four WAIDMA projects of COSTEA 2.
- Put these meta-messages into practice in large-scale hydraulics and valley bottom areas in pilot irrigation projects in order to test their operationality.

**Challenge 2: Strengthening the environmental sustainability of irrigated agriculture**

OVERVIEW OF THIS CHALLENGE:

The intensification of agriculture that irrigation fosters (increased cropping intensity, higher water consumption, increased use of phytosanitary products and chemical fertilisers, extension of cultivated areas enabled by equipment, energy consumption, etc.) often goes hand in hand with environmental degradation with impacts on the climate, soil, water resources and biodiversity.

However, irrigation and hydro-agricultural developments also bring positive externalities and there is an intrinsic potential to improve their environmental sustainability at the farm level through improved agricultural practices, better nutrient management and the search for alternative water resources, as well as through more ecological infrastructure maintenance strategies.

THE SUBJECTS ANALYSED IN RELATION TO THIS SECOND CHALLENGE WERE:

- Adaptation strategies for irrigated agriculture and the limitation of GHG emissions;
- Agroecological practices in irrigated agriculture;
- Ecological engineering for infrastructure design and management;
- The circular economy and wastewater reuse;
- The sober management of natural resources (water, soil, energy).

META-MESSAGES

With regard to the issues related to this second challenge, the following three meta-messages have been formulated, and illustrated by examples resulting from the structuring actions (SAs) and collaborative actions (CAs) carried out in the framework of COSTEA 2:

• **Develop wastewater and sludge reuse and ensure an appropriate territorial governance framework**

*'Wastewater and sludge are recoverable and can generate social, environmental and economic benefits; they should be considered as such rather than as constraints. REUSE planning should be part of the territory-wide water cycle as a component of integrated water resource management (IWRM). It is a key asset in a circular economy for water, nutrient and energy recovery.'* (SA REUSE)

• **Irrigated agriculture and agroecology can go hand in hand**

*'Agroecological practices have been observed in irrigated systems, mainly at the farm level, with encouraging socio-economic and agro-environmental performances.'* (SA agroecology)

*'A reengineering of collective irrigated systems should be undertaken to allow the flexibility necessary to develop agroecology.'* (SA agroecology)

• **In terms of decision support, adequate use should be made of methods and tools to quantify climate and environmental impacts, such as NEXT or life-cycle analysis (LCA)**

*'There are many inaccuracies in carbon balance assessments (in terms of the methodologies used, data collection, etc.). To comply with the Paris Agreement, we need to improve these methods and explore new ones (such as LCA) in order to better integrate environmental and climatic aspects in the evaluation of the consequences of irrigated agriculture projects.'* (CA climate change)

*'Water is still too absent from discussions on the impact of agriculture on the climate, even though it is the language and signature of the climate (floods, drought, rising sea levels, etc).'* (CA climate change)

**PROSPECTS AND AVENUES PROPOSED FOR THE CONTINUATION OF COSTEA'S WORK::**

- Continue to develop methodologies to assess the climatic and environmental impact of irrigated agriculture and develop the concept of resilient irrigation.
- Develop training for managers of the COSTEA network on agroecological practices and climatic, economic and environmental evaluation approaches (LCA, cost-benefit analysis, carbon assessments, etc.).
- Develop operational tools for practitioners (Innovation of the Future, role playing, etc.) that combine the dimensions of economic and ecological efficiency.
- In future work, integrate: (a) issues related to soil ecology and its multiple functions and ecosystem services; (b) energy and food systems.

**Challenge 3: Reducing risks and increasing the resilience of farmers and developments**

**OVERVIEW OF THIS CHALLENGE:**

Agriculture is currently faced with two major types of escalating risk: climate change and market variability. How can these be reduced and the resilience of farmers, irrigated agriculture and infrastructures be improved?

The introduction of irrigation in an agricultural territory and water control from the hydrological scale through to the level of cultivated plots, aims to reduce the climatic risk, secure production and allow agricultural intensification and diversification. Managing the 'water input' is thus also a lever for adapting agriculture to climate change. This presupposes that the infrastructures are: 1) adapted to the needs of the producer-users (designs chosen in relation to the cropping systems and the irrigation practices and techniques implemented by the farmers); 2) sustainable and functional in the long term, i.e. well managed and maintained, resilient and capable of sustainably mobilising the water resources from which they supply the irrigators.

Moreover, while irrigation is indeed a form of adaptation to climate risk (particularly because it secures water resources), it is important to ensure that there is no transfer to other types of risk. The transformation of production systems (intensification, single crop farming, etc.) can expose producers to risks related to marketing, access to markets and their variability, and access to credit which is often necessary to invest in production means.

**THE SUBJECTS ANALYSED IN RELATION TO THIS THIRD CHALLENGE WERE:**

- The vulnerability of irrigated territories to drought and flood risks and the design, implementation and maintenance of resilient irrigation and drainage infrastructures;
- The conditions for the development of irrigated agriculture that strengthens farmers' capacities to adapt to climate change;
- Agricultural development models that are more resilient to economic risk.

**META-MESSAGES**

With regard to the issues related to this third challenge, the following four meta-messages have been formulated, and illustrated by examples resulting from the structuring actions (SA) and collaborative actions (CA) carried out in the framework of COSTEA 2.

**• Start from local practices and solutions that ensure adaptation and resilience**

*'Agroecological practices that strengthen farmers' resilience to external shocks have been observed in irrigated systems, mainly at an individual level, but they remain infrequent.'* (SA agroecological transitions)

*'The development of an ecosystem of services to irrigators is a guarantee of resilience. Operational schemes to strengthen services to irrigators should be developed case by case and be based on value chain-territory diagnoses.'* (SA services to irrigators)

*'Improving the resilience of hydro-agricultural developments requires WAIDMAs to exercise good project ownership. This calls for: (1) better external and internal consultation to adapt projects to the needs of all stakeholders; (2) better selection of companies and better monitoring/evaluation.'* (SA WAIDMA project ownership)

*'Consider REUSE as a water resource in its own right.'* (SA REUSE)

**• Plan and take account of multiple uses**

*'Recognise and understand the various current uses of valley bottoms, the constraints to be overcome and the needs expressed by local users. Design development plans for valley bottoms that extend beyond the agricultural area to be intensified, to take into account their multiple uses and the ecosystem services provided.'* (SA valley bottoms)

*'Floodplain development and management projects should be rethought from a multifunctional perspective. The development of irrigated agriculture in floodplain areas can only be based on partial control of water resources and must be balanced with other uses of common resources: fishing, livestock farming, etc.'* (SA floodplain areas)

*'Investments in irrigation tend to accentuate the process of privatisation of common resources and should be rethought so as not to weaken the multifunctionality of ecosystems from which the most vulnerable households benefit.'* (SA land tenure South-East Asia)

**• Land is a natural capital to be preserved and not a support: the production model needs to be changed**

*'Valorise and strengthen the natural functionalities of the environment when choosing development options and cropping systems to be promoted, and to secure crops in the face of water risks and the means of users. Reflect on methods of intensifying sustainable crops that have less impact on the environment and are compatible with producers' strategies'* (SA valley bottom; SA agroecology)

*'The notion of the diversity of resources and uses should take precedence over that of optimisation and intensification. Floodplains are scattered with remarkable ecosystems (boeungs, esteros, merjas) whose role can be crucial from the perspective of resilience to global changes.'* (SA floodplains)

*'Regulate indirect (tenant) farming in privately irrigated territories'* (SA irrigated land)

**• Set up risk-sharing arrangements that take account of inequalities at territorial level**

*'To control the health and environmental risks linked to REUSE, the stakeholders of REUSE projects need to anticipate these risks and propose solutions adapted to the uses and the territories.'* (SA REUSE)

*'Mechanisms for the local redistribution of the added value generated by investments to support the development of irrigated agriculture should be put in place so that they do not result in agricultural dynamics and territorial restructuring based on the depletion of water and soil resources, and the increased precariousness of the most vulnerable rural populations, especially women.'* (SA Maghreb land tenure)

**PROSPECTS AND AVENUES PROPOSED FOR THE CONTINUATION OF COSTEA'S WORK:**

- Continue the survey of innovations but gear it towards agroecological practices in irrigated systems in order to develop a catalogue of practices that could be shared within COSTEA.
- Identify risk-sharing and insurance methods on a territorial scale and their potential impacts on agricultural practices and natural resources.
- Analyse possible trade-offs between intensification and the multiple uses of land and water resources, and equity in the distribution of the benefits.
- Integrate the issue of gender equality in future work with a particular focus on themes related to women's access to resources, be it land, water or financial credit.

**Challenge 4: Supporting change through technical and institutional innovation**

**OVERVIEW OF THIS CHALLENGE:**

In order to become more efficient, irrigated systems need to be transformed through technical and institutional innovations. These transformations are both encouraged and produced from above (e.g. modernisation of public schemes, technical change, or delegation of water management to users) and/or adopted, adapted and disseminated by farmers and their environment via local entrepreneurs (e.g. propagation of drip systems, use of smartphones, solar pumping, water and land management arrangements).

These transformations involve a wide range of public and private actors: multiple funding agencies, central and local administrations, project owners, farmers, design offices, engineering, research, various suppliers and other economic actors, and the way in which an irrigation project is

conducted has become an often normative process, with standardised steps and procedures. Nevertheless, these approaches should be able to better involve local people, with a view to renewing project engineering activities and infrastructure design methods.

**THE SUBJECTS ANALYSED IN RELATION TO THIS FOURTH CHALLENGE WERE:**

- Economic incentives to encourage innovation;
- Adoption of/resistance to change and the performance of technical and organisational innovations;
- Innovative methods for designing irrigation projects from a technical point of view and for engineering consultation with local communities and the various actors involved.

**META-MESSAGES**

With regard to the issues related to this fourth challenge, the following six meta-messages have been formulated, and illustrated by examples resulting from the structuring actions (SAs) and collaborative actions (CAs) carried out in the framework of COSTEA 2:

**• Study ways of unlocking infrastructure in irrigated areas in order to promote agriculture with less environmental impact and that allows the roll-out of agroecology**

*'Technical innovation should aim to unlock infrastructure to favour agroecological transition in large and medium-sized public collective hydro-agricultural schemes.'* (SA agroecological transition)

*'There is a need for reflection and consultation to find solutions to the dissatisfaction noted with regard to the developments carried out or in progress, concerning their design, the control of the works, and the sharing of technical, administrative and legal skills/responsibilities/experiences'* (SA WAIDMA project ownership)

**• Develop a participatory, clear, fair and operational contractual approach between farmers, managers of hydro-agricultural facilities and value chain actors for the development of schemes**

*'Give the WAIDMAs a role in ensuring the quality of production factors. The WAIDMAs should be at the service of producers with a view to developing value chains (quantity & quality) towards a more efficient, sustainable and resilient agriculture.'* (SA WAIDMA value chains)

*'The managers of hydro-agricultural facilities should (re-)position themselves transversally in the ecosystem supporting the operation of irrigated sectors by facilitating inter-professional dialogue to support the sustainable development of value chains.'* (SA WAIDMA value chains)

*'Services to irrigators can be provided, depending on the case, by the public, private and commercial sectors and the agricultural profession, and even from farmer to farmer. They should not be left to the private sector alone, public intervention remains necessary.'* (SA services to irrigators)

- **Define a mode of governance based on a consultation process that is both multi-sectoral and under the responsibility of a locally legitimised coordination**

*'Consolidate a governance framework conducive to the development of REUSE by strengthening procedures, the political, institutional and legal framework, and inter-ministerial collaboration at different levels. This also requires the implementation of risk management plans such as the Water and Sanitation Safety Plan (WSSP).'* (SA REUSE)

*'The sustainable management of floodplains requires the adoption of a territorial approach and inter-sectoral collaboration.'* (SA floodplains)  
*'Irrigation-related land tenure dynamics call for the adoption of territorial approaches and inter-sectoral collaboration.'* (SA land tenure South-East Asia)

*'Put in place solutions negotiated with local stakeholders and adapted to each situation.'* (CA groundwater)

*'Time should be taken to place agricultural water in the complexity of the territory and to involve the actors of the territory, from all sectors of activity, in an iterative process of participation, consultation and co-decision so that the project can take root in a shared territorial dynamic, reducing the risks of disconnection and incoherence with local realities.'* (CA territorial approach)

*'Integrate the development of schemes and the management of irrigated land in a territorial approach.'* (SA WAIDMA land tenure)

*'Public irrigation policies are generally at odds with the principles of agroecology. A revision of these policies may sometimes be necessary to accompany the agroecological transitions of irrigated agriculture. Similarly, a reengineering of collective irrigated systems should be undertaken to allow the flexibility necessary to introduce agroecological practices: «rural engineering is dead, long live agroecological engineering!»'* (SA agroecological transition)

- **Clarify the mandates and strengthen the capacities of hydro-agricultural development managers and incorporate the sharing of infrastructure management into a dynamic process involving all actors**

*'The transfer of the management of part of the infrastructures to irrigators' associations (IAs) is a dynamic process that implies regular questioning by all of the actors. It should take into account the different contexts and be based on the experiences of the different WAIDMAs rather than on a model that is intended to be generic.'* (SA WAIDMA transfer)

*'The transfer of management of part of the infrastructures implies a sharing of responsibilities which requires constant supervision and an objective/constructive dialogue between the WAIDMA and the IA.'* (SA WAIDMA transfer)

*'The maintenance and upkeep of the infrastructures transferred to the IAs should be regularly monitored and the operation and maintenance manuals rigorously applied.'* (SA WAIDMA transfer)

- **The procedures for securing irrigated land should be contextualised and part of a participatory approach with a clear definition of the rights and obligations of the stakeholders**

*'Farmers' land tenure rights are generally recognised institutionally; however, there is still a high level of land tenure insecurity linked to the territorial reconfigurations that the development of irrigation implies (indebtedness, forced sale, etc).'* (SA land tenure South-East Asia)

*'Diversify the methods for securing and regulating land tenure and set up a monitoring system.'* (SA WAIDMA land tenure)

*'Promote the effective participation of farmers in the management of irrigated land'* (SA WAIDMA land tenure)

*'Set up risk sharing arrangements that take account of inequalities at the territorial level.'* (SA Maghreb land tenure)

- **The West African Network of Irrigation Development and Management Agencies (ROA-SAGI) should be a dynamic and permanent body, disseminating good practices and fostering its members' implementation of the recommendations of the COSTEA studies based on action plans drawn up by the WAIDMAs and adapted to their context**

*'Draw lessons from the experience of the project with "contributing expert + international consultant" tandems, and support the WAIDMAs in their reflections by setting up dedicated working groups.'*

*'Make ROA-SAGI a tool to implement the recommendations and drive ongoing benchmarking on land tenure practices in WAIDMA areas.'*

*'The WAIDMAs, via ROA-SAGI, should take ownership of the results of COSTEA's action and continue the work based on action plans drawn up and adapted to each context.'*

**PROSPECTS AND AVENUES PROPOSED FOR THE CONTINUATION OF COSTEA'S WORK:**

- Involve future farmers in the different study and design phases of irrigated schemes.
- Experiment with living labs with an adapted territorial governance framework to develop spaces of innovation for REUSE and agroecological transition.
- Develop an innovative approach linking land security, water management, farming organisation and infrastructure maintenance to foster the sustainable development of irrigated schemes.
- Develop a guide on ecological engineering and nature-based solutions for infrastructure design and management.
- Provide ROA-SAGI with a status that strengthens its role and influence within the large-scale hydraulic sector in Africa.

## PART 2 : OBJECTIVES, CONCLUSIONS AND RECOMMENDATIONS FROM THE PARTICIPATORY WORKSHOPS

A series of participatory workshops was organised as part of the COSTEA seminar in order to go beyond the thematic feedback from the various COSTEA 2 actions and take advantage of the large presence of the network members and their diversity to conduct collective discussions. Depending on the theme, the workshops had the specific objectives of: co-authoring documents (workshop on floodplains, workshop on territorial approaches to water management); holding forward-looking discussions (workshop on economic analyses of irrigation projects, workshop on the agroecological transition of large irrigated schemes, ROA-SAGI, etc.), or; defining roadmaps and action plans (workshop on REUSE, WAIDMAs, agricultural recovery and valley bottom development, etc.).

A summary of the conclusions of these workshops is presented in this section.

These conclusions and recommendations complement and deepen the meta-messages presented above.

### 1. Quantifying the environmental impacts of irrigated agriculture: opening the black box of life cycle analysis (LCA)

Facilitators: Agata SFERRATORE (SCP), Nicolas GEHENIAU (BRLi) and Nicolas ROGY (INRAE)

Cultivate rainfed rice or develop a brand new rice plot? From an environmental point of view, the question of quantifying the impacts of irrigated agriculture is not simple, and the risk of pollution transfer is high. This workshop therefore had a dual objective. On the one hand, it aimed to identify the environmental impacts of irrigated scheme projects. On the other, it illustrated the carbon footprint and life cycle assessment (LCA) approaches, while analysing contrasting territorial development scenarios based on various feedbacks.

By way of introduction, the participants were invited to take part in a collaborative Climate Fresco quiz. They then identified the most impactful phases of agricultural projects. The final objective of the workshop was to raise awareness of environmental analysis methods and the 'life cycle' thinking of an agricultural project, in order to understand the consequences to be expected in the context of climate change.

During the first part of the workshop, the environmental impacts of irrigated schemes were explained based on various questions: (a) What environmental components can be impacted by irrigated agriculture? (b) What negative consequences are induced? (c) Which stages of irrigated agriculture have the strongest impact on the environment? (d) What are the main arguments in favour of irrigated agriculture compared to rainfed agriculture? (e) What tools can be used to measure and/or predict such impacts?

Changes in land use, water abstraction, the overexploitation of resources, and the use of phytosanitary products and fertilisers emerged



from the workshop discussions as the most impactful stages of irrigated agriculture, particularly on biodiversity. Irrigated agriculture is often synonymous with more profitable production in terms of biomass harvested over the year, which also implies more security for farmers' jobs and income.

Through ex-ante assessments (via impact and modelling studies, as well as LCA) or environmental quality monitoring (via remote sensing studies based on field measurements) it is possible to measure or predict the environmental impacts when an irrigated scheme project is being envisaged. Among the tools illustrated, the participants appreciated the territorial LCA because it can link the different environmental issues mentioned. At the end of the discussions, the possibility of setting up a future COSTEA action on territorial LCA was identified, or the creation of a training course on LCA tools.

The webinar presenting the WASABI tool (water assessment by LCA), an open access software developed by the Elsa-Pact chair and mentioned during the workshop, is available via the following link: [register.gotowebinar.com/recording/2707979918892837805](https://register.gotowebinar.com/recording/2707979918892837805)

### 2. Territorial approaches to water management

Facilitators: Julien BURTE (CIRAD), Quentin BALLIN (AFD) and Jean-Yves JAMIN (CIRAD)

In the context of climate change and resource depletion, agricultural water is a major stake in the sustainable development of rural territories. Its management mobilises many actors at different scales and in relation to other resources, such as land. Sectoral and vertical approaches come up against the difficulty of grasping the multiple issues. Experience shows that the development of hydro-agricultural infrastructures does not systematically lead to more sustainable and resilient territories. In view of this, we need to look at the approach to be mobilised and how to take action. After a succinct reminder of the Policy Brief published in October 2021 on the subject ([www.comite-costea.fr/wp-content/uploads/Policy\\_Brief\\_11\\_VA\\_2\\_Web-2.pdf](http://www.comite-costea.fr/wp-content/uploads/Policy_Brief_11_VA_2_Web-2.pdf)), this participatory writing workshop allowed COSTEA actors to take part in 'rotating discussions' on three cross-cutting themes: (i) one territory or multiple territories? (ii) building the framework for territorial participation; (iii) operationalising territorial action.



The discussions on the notion of territory firstly highlighted the multitude of scales applicable to territorial approaches. In Senegal, the administrative scale plays a central role, while in Tunisia, in the case of a pilot project, the scale is centred on the participation of the actors concerned at the very local level of the territory where they live. In France, the scale used is often that of catchment areas or regions (as in the case of Occitania, but also with consultations at a more local level). It is therefore essential to raise questions as to the importance and legitimacy of the scale applied in the very definition of territories, according to the issues to be addressed. Furthermore, ensuring a sustainable water supply and increasing the resilience of territories requires a participatory approach including all stakeholders in the strategic analysis stage. As water is a public commons, the role of the State is essential in considering its use within a territory. Led by a central and locally legitimate figure, an analysis of the mandates and responsibilities of the various actors is a necessary process to increase their participation in water management. So what should be the way to proceed? In this workshop, discussions were held on the allocation of roles in terms of coordination, facilitation, financing, arbitration, sanctions and training. However, agreeing on the prerequisites remains fundamental, as does defining a long-term political strategy with the various territorial levels concerned, including the State.

These noteworthy reflections, derived from the illustrated case studies, will be used to finalise the collective drafting process aimed at completing the policy paper.

### 3. Economic analyses of irrigation projects

**Facilitators:** Florence MALERBE (independent expert), Jean-Luc FRANCOIS (independent expert), Sylvain CEDAT (IRAM) and Sylvie MORADET (INRAE)

How should the COSTEA guide, 'How to use economic analysis for viable and sustainable irrigation projects', be applied?

After a plenary presentation of the main messages of this guide, two working groups discussed: (i) how to make economic analysis a tool for the design, adjustment, monitoring and evaluation of irrigation projects, programmes and policies, and (ii) the methods and means of analysis at the level of schemes, network managers and territories. The two groups made proposals in both areas for the dissemination and ownership of the guide's recommendations in terms of resources, approach, training and organisation of the actors.

**Generally speaking, the workshop recommends using economic analysis strategically as one of the tools needed for policy dialogue between stakeholders in a new or evolving irrigation project. It also recommends using economic analysis at all stages of a project's life.**

A three-pronged approach was proposed. Firstly, the guide needs to be disseminated to stakeholders, whether or not they are members of COSTEA (project owners, funding agencies, consultancy firms, training centres, etc.) and its use promoted. The preparation of a document to operationalise the guide should be envisaged to facilitate its application. Secondly, project owners, together with their economic and financial partners (including AFD), should (re)integrate economic and financial analyses at the various levels proposed by the guide in the appraisal and implementation of projects. In this respect, COSTEA could support



project owners wishing to relaunch economic analyses according to the guide's proposals (financing and methodological support). On this basis, and by capitalising on other projects, a new version of the guide could be proposed. Finally, a training programme could be developed by COSTEA and proposed to actors (project owners and technical and financial partners).

### 4. Supporting the development of sustainable wastewater reuse practices in agriculture by setting up an international network of living-labs

**Facilitators:** Jacques BERAUD (SCP) and Benjamin NOURY (INRAE)

The REUSE structuring action partly built its recommendations based on feedback from two contrasting sites - peri-urban contexts and decentralised treatment approaches, in six target countries: Algeria, Bolivia, Morocco, Palestine, Senegal and Tunisia. A synthesis of the work carried out in 2021 and 2022 was presented, with each country illustrating the national situation of agricultural REUSE, and taking stock of the participatory workshops in the two sites concerned. A regulatory and institutional benchmark was also drafted in parallel. General and more specific issues emerged from this comparative approach, and recommendations covering a fairly broad range of issues (organisational, health, economic, regulatory, technical, etc., as well as sludge management). Indeed, these sites are encountering various successes and difficulties in implementing the reuse of treated wastewater. They benefit from an ecosystem of actors and a history on which it is important to capitalise beyond knowledge sharing. Advancing sustainable agricultural REUSE practices requires progress on all these fronts, with concerted commitment from users, the relevant public services, the private sector where appropriate, and support from research going beyond the local or national scale.

Hence the idea of developing an international network of REUSE 'living-labs', based on the sites identified by COSTEA and aiming to apply and breathe life into the above recommendations for territorial development, in areas of innovation and with long-term follow-up. There is no single answer, each site will shed light on a context and respond to its own challenges.

This workshop was also an opportunity to capitalise on the experiences of two living-lab in the Occitania region of France (Défi-clé Water Occitanie and Agroécologie), whose presentations helped to elucidate

how these initiatives are structured and operate. The participants were then divided into three groups to draw up a roadmap for the establishment of an international network of living-labs. The choice of sites forming the network should be based on their replicability. Several structuring elements are essential: support from the local authority concerned, mapping of the actors, regulatory analysis, training and capacity building, regular reporting in a consistent format, etc., with the aim of helping to formulate concrete investments in REUSE. In addition, an international facilitation structure will be needed to support the network, in particular to draft a common charter, set the pace for exchanges, ensure methodological consistency and provide technical expertise.

This workshop was therefore an opportunity to explore the relevance of the Living Lab concept for the sites studied and to define the contours of this network as well as the role of COSTEA in its design and coordination.

## 5. Definition of a roadmap for the West African Irrigation Development and Management Agencies (WAIDMAs) to take ownership of the COSTEA results

Facilitators: Alassane BA (SAED/ROA) and Mohamed Lamine DIAKITE (AFD)

COSTEA's WAIDMA structuring action allowed work on four projects: (i) the transfer to irrigators' associations in WAIDMA schemes, (ii) the WAIDMAs' role in structuring agricultural value chains, (iii) the management of irrigated land in WAIDMA schemes, and (iv) the WAIDMAs' roles as project owners. Each of these actions led to an overview of the situation and proposed areas for improvement or recommendations. In order not to leave these projects without follow-up, ROA-SAGI (the West African WAIDMA network) should now take ownership of the results of these studies and formalise the prospects for further action that could be financed by institutional partners. This network is a valuable tool for sharing and collaboration set up by the WAIDMAs with COSTEA's support. A draft roadmap had already been proposed during the WAIDMA seminar in May 2022 in Saly, Senegal. This workshop provided an opportunity to go into more detail on targeted aspects of the empowerment of the ROA-SAGI network.



Firstly, it involved laying down a framework for the governance of ROA-SAGI by setting up an ad hoc committee through the operationalisation of thematic groups and their facilitation. Secondly, the debate focused on the interest of considering an inter-project evaluation including the various partners (COSTEA, PARIIS, the WAIDMAs). A critical view was essential here to take stock of the constraints encountered and the lessons learned in the implementation of the different projects. Thirdly, the planning, monitoring and evaluation of the implementation of the different projects' recommendations was also discussed. To do this, it seems necessary to draw up costed action plans to guide the support of the partners and funding agencies involved, as well as to propose priorities and an implementation programme. Next, it will be necessary to set up a monitoring system based on relevant indicators to assess progress by theme. Finally, the workshop focused on aspects related to capitalising on and disseminating the results. The participants discussed the importance of dissemination via other platforms such as COSTEA, PARIIS, ROPPA etc. This exercise was completed by the formulation of a retro plan for each action proposed as well as its costing, which remains to be finalised and then validated by the ROA-SAGI Steering Committee.

## 6. How does the West African Network of Irrigation Development and Management Agencies (ROA-SAGI) see itself between now and 2030?

Facilitators: Khaly FALL (SAED/ROA) and Benjamin VENNAT (COSTEA/ BRLi)

In 2022, ROA-SAGI signed an agreement with REMIG (Moroccan interprofessional irrigation network) at the World Water Forum (WWF), but the concrete prospects for collaboration have yet to be defined. This drive to network agricultural water managers is in line with other international initiatives such as the INSPIRE platform launched by the World Bank. To guarantee the long-term future of ROA-SAGI and of its action, it is worth developing a shared vision among the main actors of what this network could become in the medium and long term. The objective of this workshop was therefore to use a participatory approach to bring out this common vision, the potential international synergies, and the possible actions and organisation of ROA-SAGI between now and 2030.

In groups of three, the participants were asked to develop a forward-looking vision on the following scenario:

*You are the coordination team of the West African network of WAIDMAs. At the WAIDMA steering committee meeting of 2030, you must report to the 12 DGs present on the network's annual activities.*

In November 2022, four areas of work had been defined to ensure that the results produced by the four WAIDMA structuring action projects of COSTEA 2 are properly taken up and used:

- Definition of a governance framework;
- Inter-project evaluation of the implementation of the COSTEA action;
- Planning of an action plan and definition of a monitoring & evaluation framework for its implementation;
- Capitalisation on and wide dissemination of the results.

Based on this situation, the workshop provided a fertile space for reflection, enabling a common strategy to be developed, any points of divergence

to be discussed and the resulting operational recommendations to be refined.

There was unanimous agreement on the desire to extend the network to North and East Africa. However, the question of how to integrate new WAIDMAs was debated: partnership based on the example of the REMIG agreement or full integration into the network?

Ensuring sustainable financing by developing a fund specific to ROA-SAGI based on annual contributions from the WAIDMA members and/or external funding also emerged as a common need.

Similarly, the need to provide the network with a legal status, as well as internal regulations clarifying and defining its mode of operation and management, seems to be a crucial point for its autonomy.

There were relatively few points of divergence. The question of changing the name of the network should it integrate new African managers was discussed. Finally, among the operational recommendations, the following proposals were agreed upon:

- the setting up of a database specific to the network;
- the regular organisation of inter-WAIDMA trips to share successful experiences specific to each WAIDMA and capitalise on existing experiences;
- the development of international training courses to strengthen inter-WAIDMA skills in specific areas;
- the need for the recognition of ROA-SAGI at a national and international level;
- the implementation of a communication strategy to promote this recognition;
- the definition of a reference situation (baseline) allowing the development of the monitoring & evaluation framework for the network's action as desired by the WAIDMAs.

## 7. Roundtables and participatory workshops on irrigated land (parallel sessions)

Facilitators: Jean-Philippe VENOT (IRD/COSTEA), Aurore MANSION (GRET) and Charlotte RAVAUX (GRET)

The issue of irrigated land has been the subject of work in COSTEA's three regions of action: West Africa, South-East Asia and the Maghreb. This work has been carried out in close collaboration with the Comité Technique Foncier & Développement (CTFD, [www.foncier-developpement.fr](http://www.foncier-developpement.fr)) and so it was only natural that COSTEA and CTFD should organise a day together to discuss the results of the various studies carried out.

This day was organised in two main parts: firstly, parallel 'geographical' sessions to discuss the results of the studies carried out in depth, and 'rotating' world café-type sessions to discuss issues that cut across the different geographical areas. These different sessions were facilitated by members of the two networks (CTFD and COSTEA) who are specialists in land issues.

The debates brought out themes related to the major challenges identified by COSTEA, and in particular: (1) that the dynamics of irrigated land are



very strongly linked to development models and policies promoted at national level and are part of market dynamics at territorial level; (2) that the diversity of systems of rights, the diversification of modes of access to irrigated land, and the coupled phenomena of indebtedness and land concentration require a plurality of approaches in terms of securing land; (3) the need to develop regulatory frameworks on a territorial scale that take into account the varied interrelations between water and land according to the contexts.

These discussions will form the basis of a CTFD synthesis report and will be used as input for the editorial of a special issue of the journal Cahiers Agricultures on the subject: [www.cahiersagricultures.fr/component/toc/?task=topic&id=1607](http://www.cahiersagricultures.fr/component/toc/?task=topic&id=1607)

## 8. Increasing efficiency and resilience and ensuring responsible governance in the framework of the agroecological transition of large irrigated schemes

Facilitators: Dominique OLIVIER (BRLi), Élise AUDOUIN (CACG), Christophe RIGOURD (independent expert) and Jean-Philippe FONTENELLE (Bordeaux Sciences Agro)

Simultaneously applying ecological, economic and social principles to the design and management of sustainable agricultural and food systems is one of the main objectives of agroecology. At the same time, ensuring the rehabilitation of large irrigated rice-growing schemes in a perspective of agroecological transition is a major challenge. After an exercise to contextualise a typical scheme in West Africa, this workshop enabled the participants to identify various levers based on the FAO's agroecology principles, such as efficiency at the plot level, resilience at the territory level and responsible governance at the national level. This workshop was also an opportunity to define the contours of an ecosystem of services adapted to these transitions. The points discussed and the proposals made provided information for engineers, managers and farmers as well as for funding agencies with a view to the evolution of practices in West Africa.

This workshop firstly formulated three major observations:

- Although the negative impacts of the current agricultural models on large irrigated rice schemes are increasingly visible, there is still no consensus in West Africa on the need for their agroecological transition to ensure the sustainable development of irrigated agriculture. In particular, the objectives of food security and sovereignty, or even zero rice imports set by some countries, are sometimes put forward to justify these conventional models.

- (b) The vision of these possible transitions and of what could be 'major agro-ecological developments' has yet to be clarified. Beyond all the suggestions made (hydraulic, agronomic and organisational), it seems necessary to introduce more flexibility in the large schemes to carry out these transitions. Moreover, the multiple needs would require constant contextualisation adapted to the value chains and territories.
- (c) These transitions also require joint impetus between the State and farmers, as top-down approaches have shown their limits. The time has come for concerted action, whether to formulate the transitions in question or new governance schemes. During this workshop, it was not clear how to rethink the offer of services to irrigators so that it responds to the transitions challenges raised, despite the fact that the need to improve this offer seems unanimously recognised. The workshop therefore probably represented a first step towards the unlocking required in West Africa.

Further case studies are needed to more concretely illustrate the transition path and the future of 'large agroecological irrigated schemes' with examples in terms of benefits for States and irrigators. These tangible elements could then be used to advocate for agroecological transitions.

## 9. Relevance and feasibility of improvement proposals for the sustainable hydro-agricultural development of valley bottoms

Facilitators: **Amandine ADAMCZEWSKI-HERTZOG (CIRAD)**, **Jean-Louis FUSILLER (CIRAD)** and **Georges SERPANTIE (IRD)**

The work on agricultural enhancement and valley bottom development in West Africa, carried out in close collaboration with CILSS PARIIS, has enabled new avenues to be explored with the aim of ensuring the greater sustainability of these hydro-agricultural developments and an integrated vision of the issues they represent from the hydrological, agro-environmental and socio-economic points of view.

In this workshop, participatory work in sub-groups provided a space for discussion in order to better evaluate the relevance and feasibility of the tools proposed within the framework of the COSTEA studies, firstly by identifying the obstacles and then new operational methods.

From a hydrological point of view, the aim was to examine how to address the water opportunities and risks for crops in the context of climate change. An agro-climatic analysis to identify the risks of excess or lack of water could help to better plan crop cycles. However, the poor quality of meteorological data and the failure to take account of the contribution of groundwater are currently obstacles to the use of this analysis.

The discussions then focused on the currently insufficient integration of the impact of structures, such as micro-dams, in the evaluation of water balances. The importance of disseminating and training local actors on simulation tools for the filling and recession of water bodies is proving to be a necessary aspect of improving water management in West Africa. From an agri-environmental point of view, the idea was to think about how to better consider and make the most of the rich valley bottom ecosystems and biodiversity in pre-development studies, and in particular how to include the notions of ecosystem services provided by valley bottoms.

To do so, these studies should favour interdisciplinary and participatory approaches, integrating more agronomic and environmental expertise as well as local know-how.

Among the main recommendations that emerged, it seems important to bypass the current trend of standardising practices and to favour partitioning the valley bottoms into production, fishing, conservation, smallholder farming and grazing areas, and seeking to combine rice cultivation with market gardening to make better use of water resources.

Finally, from a socio-economic point of view, the work focused on how to foster the commitment and inclusion of local people throughout the development process and on the type of action plan to be put in place to ensure local capacity building. One solution presented was to promote a spatialised land analysis prior to development to support dialogue with local people on the spatial impact of the development according to the different cultivation sections. The output of this workshop is therefore intended to feed into the process of finalising standard Terms of Reference necessary for future valley bottom development.

## 10. Developments in floodplains: meeting of the Consultative Group

Facilitators: **Jean-Philippe VENOT (IRD/COSTEA)**, **Guillaume LACOMBE (CIRAD)** and **Sylvain BLEUZE (AVSF)**

The purpose of this session was to present a first version of the position paper summarising COSTEA's work on floodplain governance. The following messages were discussed:

- The hydrological processes of large floodplains are complex, and to understand them, it is necessary to establish long-term multi-form monitoring networks.
- Irrigated agriculture in large floodplains should be considered from the point of view of the notion of partial water control with a view to diversifying uses and distributing benefits rather than optimising the 'land' resource alone.
- Thinking about the least developed areas of large floodplains in terms of their multifunctionality, and not only in terms of their potential for agricultural intensification, remains a prerequisite to foster the resilience of populations.
- Participatory territorial and cross-sectoral consultation processes can enable new approaches to the development and governance of large floodplains.

The discussions underlined the relevance of the messages. However, the Consultative Group recommended in particular that messages 2 and 3 on the issues of partial control (of risk) and the need to rethink agricultural planning and development methods (from the perspective of supporting the functioning of ecosystems, based in particular on the principle of 'do no harm') should be given greater prominence than the message on complex hydrology (which nevertheless remains relevant).

The Consultative Group also reiterated the importance of implementing multi-actor territorial consultation approaches for the planning and development of these areas. It stressed that such participatory approaches could play a key role in developing better knowledge of these complex areas, including through the development of distributed observation and monitoring networks driven by the actors (e.g. citizen science).



## 11. Floodplain management games and feedback on support approaches

Facilitators: Jean-Philippe VENOT (IRD/COSTEA), Mathieu DIONNET (LISODE), Sylvain BLEUZE (AVSF) and Malyne NEANG (Royal University of Agriculture)

Floodplains are areas with high management stakes due to their multifunctionality: agricultural production and multiple ecosystem services whose dynamics are strongly affected by the construction of infrastructures to control water resources.

The aim of this session was to discuss the opportunities and constraints of approaches designed to support the territorial dynamics at work in floodplains. To do this, the debates were based on two simulations in which the participants could experiment with 'serious games' designed to explore different development scenarios for the Daule catchment area in Ecuador and the Upper Mekong Delta in Cambodia with the stakeholders (farmers, local elected officials, administrative officials).

The discussion that followed placed the serious games used in the broader perspective of the support approaches used in Ecuador and Cambodia. The discussions highlighted: (1) the potential of such approaches to highlight and discuss the possible trade-offs that characterise any intervention in complex mosaic landscapes

characterised by the interdependence of uses and resources and fragile socio-environmental balances; (2) the need to clarify the objectives of the support approaches as well as the 'postures' of the individuals and organisations piloting them (in particular: Are the objectives predefined? By whom? Or do they have to emerge from the approach itself?); (3) the need to reflect on and update any asymmetries of power and hierarchies of knowledge mobilised and generated by such approaches; (4) the fact that these approaches and the changes that they can accompany require long-term involvement for actors to engage in them and identify the possible room for manoeuvre, as well as considerable adaptability (often difficult to reconcile with 'project cycles', which makes them specific and difficult to replicate beyond a few major principles); and finally (5) the fact that the posture of 'accompanier/facilitator' can be seen as contradictory to that of 'expert' which can affect, in certain contexts, the legitimacy of the process.

Furthermore, the discussion underlined that the development of tools such as serious games should be considered from the perspective of the human resources that they require (especially in terms of time), a large part of which involved work to identify the stakeholders and challenges (e.g. diagnosis) prior to the construction of these tools, which allow different participation methods that are complementary to more conventional approaches such as focus groups, sharing workshops, etc.

# ANNEXE

SEMINAR PROGRAMME

## COSTEA2 RESTITUTION SEMINAR

NOVEMBER 21ST-25TH 2022, AGROPOLIS (MONTPELLIER)

### THE OBJECTIVES :

*BRINGING TOGETHER THE ACTORS  
WHO CONTRIBUTED TO  
THE ACTIVITIES CARRIED OUT*

*PRESENTING AND PROMOTING  
THE RESULTS OF THE STUDIES*

*BUILDING TOGETHER  
THE PROJECT PERSPECTIVES*



Photo credit : *Olivier GILARD, Stephan GLADIEU, François MOLLE, Jean-Philippe VENOT*  
Source : [https://www.flickr.com/photos/water\\_alternatives](https://www.flickr.com/photos/water_alternatives)



## FINAL PROGRAM

11/11/2022 Version

Project owner :

With the support of :

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# Program summary

## Monday november 21st 2022

### Opening of the seminar

9:00 - 10:00 a.m.

Welcome and registration of participants

10:00 - 12:30 a.m.

Opening of the seminar

Room : Amphithéâtre

12:30 - 2:00 p.m.

Lunch break

2:00 - 4:00 p.m.

**Environmental  
evaluation  
workshop**

Room : Badiane

**Territorial  
approaches  
workshop**

Room : Passiflore

**Economic  
analysis  
workshop**

Rooms : Bambou, Argane

4:00 - 4:30 p.m.

Coffee break

4:30 - 6:00 p.m.

**Environmental  
evaluation  
workshop**

Room : Badiane

**Territorial  
approaches  
workshop**

Room : Passiflore

**Economic  
analysis  
workshop**

Rooms : Bambou, Argane

# Program summary

## Tuesday november 22nd 2022

### Parallel sessions

**West African Irrigation Development and Management Agencies - WAIDMA -  
Reuse of treated wastewater - REUSE -**

9:00 -10:30 a.m.

**WAIDMA action  
restitution**

Room : Amphithéâtre

**REUSE action restitution**

Room : Badiane

10:30 - 11:00 a.m.

**Coffee break**

11:00 - 12:30 a.m.

**WAIDMA action  
restitution**

Room : Amphithéâtre

**REUSE action restitution**

Room : Badiane

12:30 - 2:00 p.m.

**Lunch break**

2:00 - 4:00 p.m.

**WAIDMA  
Workshops**

Rooms : Bambou, Passiflore

**REUSE  
workshop**

Room : Badiane

4:00 - 4:30 p.m.

**Coffee Break**

4:30 - 6:00 p.m.

**WAIDMA  
Workshops**

Rooms : Bambou, Passiflore

**REUSE  
workshop**

Room : Badiane

**Alternatively**

3:00 - 5:00 p.m.

**Visit of the INRAe PReSTI platform  
(Montpellier, Lavalette campus)**



# Program summary

## Wednesday november 23rd 2022

### Parallel sessions

**agroecological transitions in irrigated systems - AET - Services to irrigators - STI - Irrigation and land tenure**

9:00 -10:30 a.m.

**AET action restitution**

Room : Amphithéâtre

**Land tenure action  
restitution**

Room : Badiane

10:30 - 11:00 a.m.

**Coffee break**

11:00 - 12:30 a.m.

**STI action restitution**

Room : Amphithéâtre

**Land tenure action  
restitution**

Rooms : Badiane, Passiflore, Bambou

12:30 - 2:00 p.m.

**Lunch break**

2:00 - 4:00 p.m.

**AET and STI  
workshop**

Rooms : Bambou, Passiflore, Hibiscus

**Land tenure  
workshop**

Room : Badiane

**ROA - WAIDMA  
Steering Committee**

Room : Argane

4:00 - 4:30 p.m.

**Coffee break**

4:30 - 6:00 p.m.

**AET and STI  
workshop**

Rooms : Bambou, Passiflore, Hibiscus

**Land tenure  
workshop**

Room : Amphithéâtre

# Program summary

## Thursday november 24th 2022

### Parallel sessions

#### Developing and managing floodplains in a context of global change

#### Development and management of valley bottoms and small flood plains in West Africa

9:00 -10:30 a.m.

**Floodplains action  
restitution**

Room : Amphithéâtre

**Valley bottoms action  
restitution**

Room : Badiane

10:30 - 11:00 a.m

Coffee break

11:00 - 12:30 a.m.

**Floodplains  
workshop**

Room: Passiflore

**Valley bottoms  
workshop**

Room : Badiane

12:30 - 2:00 p.m.

Lunch break

2:00 - 4:00 p.m.

**Floodplains  
workshops**

Rooms : Bambou, Badiane

**COSTEA  
Steering Committee**

Room: Amphithéâtre

4:00 - 4:30 p.m.

Coffee break

4:30 - 6:00 p.m.

**Floodplains  
workshop**

Room : Badiane

**Donor  
Intervention**

Room : Amphithéâtre

# Program summary

## Friday november 25th 2022

### Closing of the seminar

9:00 -10:30 a.m.

Final restitution

Room: Amphithéâtre

10:30 - 11:00 a.m.

Coffee break

11:00 - 13:00 a.m.

Final restitution - Closing

Room : Amphithéâtre

1:00 - 2:30 p.m.

Lunch break

2:00 - 2:45 p.m.

COSTEA Photo

2:45 - 6:00 p.m.

Visit of the Reuse of treated wastewater  
INRAe experimental platform  
(Murviel-lès-Montpellier)

2:45 - 6:00 p.m.

Alternatively  
Visit of the A. Dumont station and  
the reomte management system of the BRL network  
(Nîmes)



# Monday november 21st 2022

## Opening of the seminar

- 9:00 - 10:00 a.m.** ● Welcome of participants
- 10:00 - 12:30 a.m.** ● Plenary meeting - Opening of the seminar
- 10:00 - 10:15 a.m.** ● Welcoming words of the AFD and AFEID
- 10:15 - 10:45 a.m.** ● COSTEA presentation
- 10:45 - 11:00 a.m.** ● Explanation of the seminar proceedings
- 11:00 - 12:30 a.m.** ● **Round Table**
- Contextualization of the COSTEA device in the framework of the four challenges of irrigated agriculture :*
- 1) To ensure the socio-economic development of the territories*
  - 2) To identify and analyze technical, social and institutional innovations*
  - 3) To increase resilience to climate risks*
  - 4) To promote environmental sustainability*
- 12:30 - 2:00 p.m.** ● Lunch break
- 2:00 - 4:00 p.m.** ● Parallel participatory workshops (1st part) \*
- 1. Quantifying the environmental impacts of the irrigated agriculture : opening the black box of the ACV**
  - 2. Territorial Approaches for the water management**
  - 3. Economic analysis of irrigation projets**
- 4:00 - 4:30 p.m.** ● Coffe break
- 4:30 - 6:00 p.m.** ● Parallel participatory workshops (2nd part) \*



**Hybrid Format with live streaming**



**Session translated into English**

\*

**All workshops require attendance participation**

# Tuesday november 22nd 2022

## Parallel Sessions

### West African Irrigation Development and Management Agencies - WAIDMA - Reuse of treated wastewater - REUSE -

9:00 10:30 a.m.



WAIDMA introductory session

*Transfer to Irrigants worksite :*  
Summary note and work restitution  
*Value chains worksite :*  
Summary note and work restitution  
*Land Tenure worksite :*  
Summary note and work restitution

REUSE introductory session

Summary Note  
Cross-worksites analysis  
Storytelling of the sites (1st part)  
Institutional Benchmark



10:30 11:00 a.m.

Coffee break

11:00 12:30 a.m.



WAIDMA introductory session

*Project Ownership worksite :*  
Summary note and work restitution

Ruond Table

REUSE introductory session

Storytelling of the sites (2nd part)

Round Table



12:30 2:00 p.m.

Lunch break

2:00 4:00 p.m.

Parallel participatory workshops (1st part) \*

1. Roadmap definition for the appropriation  
of COSTEA resultats

2. How does the ROA-WAIDMA network  
look like by 2030 ?

3. Roadmap definition for setting up  
the REUSE living LABs network



4:00 4:30 p.m.

Coffee break

4:30 6:00 p.m.

Parallel participatory workshops (2nd part) \*

3:00 5:00 p.m.

Proposed field trip :  
visit of the INRAe PReSTI plateform  
(Montpellier, Lavalette campus)



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DE L'AGRICULTURE IRRIGUÉE

# Wednesday november 23rd 2022

## Parallel Sessions

### Agroecological transitions in irrigated systems -AET- services to irrigators -STI- Irrigation and Land tenure

9:00 10:30 a.m.



AET introductory session

Summary note

Illustrations of the note's recommendations  
by the worksites' realities



Land tenure introductory session

CTFD Introductory remarks

Summary note

Worksites teasers

Explanation of the day's proceedings

10:30 11:00 a.m.

Coffee break

11:00 12:30 a.m.



STI introductory session

Summary note

Worksites restitution :  
Tunisia and Cambodia



Parallel sessions \*

1. South East Asia Round Table

2. West Africa Round Table

3. Maghreb Ruond Table

12:30 2:00 p.m.

Lunch break

2:00 4:00 p.m.

Parallel participatory workshops (1st part) \*

1. Increasing efficiency and resilience  
and ensuring responsible governance in the  
context of the agroecological transition  
of the major irrigated areas

2. Land tenure World Café

4:00 4:30 p.m.

Coffee break

4:30 6:00 p.m.

Parallel participatory workshops  
(2nd part) \*



Land tenure conclusions

Institutional Round Table

Identification of key messages and  
issues for the future



2:00 4:00 p.m.

ROA-WAIDMA Steering Committee



**COSTEA**  
ENSEMBLE POUR RELEVER LES DÉFIS  
DE L'AGRICULTURE IRRIGUÉE



# Thursday november 24th 2022

## Parallel sessions

### Developing and managing floodplains in a context of global change

### Development and management of valley bottoms and small flood plains in West Africa



# Friday november 25th 2022

## Closing of the seminar

- 9:00 - 12:00 a.m.** ● Plenary - Final restitution  
- 9:00 - 9:30 a.m.** ● Presentation : *Supporting collaborative groundwater governance - policy design in Limaoua (Tunisia)*
- 9:30 - 10:30 a.m.** ● Final report about the four challenges and prospective debate (1st part)  
Challenge 1. Economic Development
- 10:30 - 11:00 a.m.** ● **Coffee break**
- 11:00 - 12:45 a.m.** ● Final report about the four challenges and prospective debate (2nd part)  
Challenge 2. Technical innovation and institutional reform  
Challenge 3. Environmental sustainability  
Challenge 4. Resilience
- 12:45 - 1:00 p.m.** ● Closing remarks AFD, AFEID
- 1:00 - 2:30 p.m.** ● **Lunch break**
- 2:30 - 2:45 p.m.** ● *COSTEA Photo*

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### Proposed field trip :

- 2:45 6:00 p.m.** visit of the A. Dumont station and the remote management system of the BRL network (Nîmes)
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### Alternatively :

- 2:45 6:00 p.m.** visit of the INRAe reuse of treated wastewater experimental platform (Murviel-lès-Montpellier)
-

# List of participatory workshops

## 1. Quantifying the environmental impacts of the irrigated agriculture : opening the black box of ACV

*Growing rainfed rice or building a brand new rice paddy? From an environmental point of view, the question of quantifying the impacts of irrigated agriculture is not simple, and the risk of the pollution transfer is great. This workshop therefore has a double objective. On the one hand, it aims to identify the environmental impacts of irrigated perimeter projects. On the other hand, it illustrates the Carbon Footprint and Life Cycle Assessment (ACV) approaches, while analysing divergent scenarios of territorial development from various feedbacks. As an introduction, participants will be invited to take part in the collaborative quiz of the Climate Fresk. Then, the most impactful phases of agricultural projects will be identified. The final objective of the workshop is to raise awareness of environmental analysis methods and the "life cycle" thinking of an agricultural project, in order to understand the expected consequences in a context of climate change.*

Moderators: Agata SFERRATORE and Nicolas GEHENIAU.

Date, time and location: Monday November 21st from 2 to 6 p.m., Badiane Room.

Places available: 30.

## 2. Territoriales approaches for water management

*In a context of climate change and resource scarcity, agricultural water is a major issue for the sustainable development of rural areas. Its management mobilises multiple stakeholders at different levels and in connection with other resources, such as land tenure. If a sectoral and vertical approach is envisaged, this management comes up against the difficulty of understanding the multiple issues at stake. Experience shows that the development of hydro-agricultural infrastructures does not systematically translate into greater sustainability and resilience of the territory. Faced with this observation, it is appropriate to question the approach to be mobilised and the way to act. After a quick reminder of the Policy Brief published in October 2021, this participative writing workshop will allow stakeholders to take part in "rotating discussions" around three cross-cutting themes: (i) A territory or territories? (ii) Building the framework for territorial participation (iii) Operationalising territorial action. Thus, the notable and innovative elements of the illustrated case studies will be used to feed into the collective writing process aimed at completing the policy paper.*

Moderators: Julien BURTE and Meriem JOUINI.

Date, time and location : Monday 21 November from 2 to 6 p.m., Passiflore room.

Places available: 18.

## 3. Economic analysis of irrigation projets

*How to implement the recommendations of the COSTEA economic guide? After a debate in plenary, two groups will work on how to make economic analysis a tool for designing irrigation projects as well as on the practices of analysis at the actors' level. A few subjects will be chosen and each group will reflect on the current practices and the constraints encountered, in order to propose practical solutions to be implemented in the definition of irrigation projects (change of approach, resources, methods, etc.).*

[Download the COSTEA economic guide.](#)

Moderators : Florence MALERBE, Jean-Luc FRANCOIS, Sylvain CEDAT and Sylvie MORADET.

Date, time and location : Monday November 21st from 2 to 6 p.m., Bambou and Arbose rooms.

Places available : 40.

# List of participatory workshops

## 4. Roadmap definition for the setting up of a network of RESUSE living LABs \*

*The REUSE structuring action has partly built its recommendations on the feedback from 12 local sites. These sites are experiencing various successes and difficulties in implementing the reuse of treated wastewater in their countries. They benefit from an ecosystem of actors and a history on which it is important to capitalise beyond knowledge sharing. One of the conclusions of these action is to support and strengthen the local experiences by structuring the site diversity via the creation of a network of living LABs. This workshop is an opportunity to explore the relevance of the Living Lab concept for local sites, to define the outlines of this network as well as the role of COSTEA in its conception and animation.*

Moderators : Jacques BERAUD and Benjamin NOURY.

Date, time and location : Tuesday November 22nd from 2 to 6 p.m., Badiane room.

Places available : 30.

\* This workshop will be translated into English and Spanish.

## 5. Roadmap definition for the appropriation of COSTA results by WAIDMA

*The WAIDMA structuring action has made possible to work on 4 worksites (i) the transfer to the irrigators' associations, (ii) the WAIDMA role in structuring the agricultural value chains, (iii) the land tenure, (iv) the WAIDMA role as a project owner. Each of these worksites resulted in a state of the art and illustrated suggestions for improvement or recommendations. In order to not leave these projects unattended, the ROA network must take ownership of results and formalise the prospects for further work that could potentially be financed by institutional partners. A draft roadmap had already been proposed during the WAIDMA seminar in May 2022 in Saly. This workshop will be an opportunity to complete and finalise the roadmap, the action plan and its costing.*

Moderators : Alassane BA and Benjamin Vennat.

Date, time and location : Tuesday November 22nd from 2 to 6 p.m., Bambou room.

Places available : 20.

## 6. How does the ROA-WAIDMA network look like by 2030 ?

*The ROA-WAIDMA is a formidable sharing tool set up by the WAIDMA with the COSTEA support. In 2022, the ROA-WAIDMA signed an agreement with REMIG (Moroccan interprofessional irrigation network) during the World Water Forum (WWF). However, concrete prospects for collaboration have not yet been defined. This networking dynamic joins other international initiatives, such as the INSPIRE platform launched by the WB. To guarantee the sustainability of the ROA-WAIDMA network and its action, it is interesting to develop a shared vision of what this network can become in the medium and long term. This workshop will therefore aim to bring out this common vision, potential international synergies, possible actions and the organisation of the ROA-WAIDMA network at the horizon 2030.*

Moderators : Khaly FALL and Mohamed Lamine DIAKITE.

Date, time and location : Tuesday November 22nd from 2 to 6 p.m., Passiflore room.

Places available : 20.

# List of participatory workshops

## 7. Land tenure round tables (parallel session)

*Irrigated land management raises specific questions due to the strong interdependencies that irrigation implies between two types of resources, water and land, which have their own but also coupled dynamics. Understanding these interactions is essential to ensure equity and environmental sustainability of the irrigated agriculture. These three round tables - that will be held in parallel - will aim to present and discuss the results of the studies carried out within the framework of COSTEA in South East Asia, Maghreb and WAIDMA zone.*

Moderators : Jean-Philippe VENOT, Ehssan EL MEKNASSI and Olivia AUBRIOT.

Date, time and location : Wednesday November 23rd from 11:30 to 12:30 a.m., Badiane, Passiflore and Bambou rooms.

Places available : 10 + 10 + 10.

## 8. Land tenure World Café

*Irrigated land issues are highly regionalized because the access and use conditions of water and land depend on the development contexts of the irrigated agriculture. The aim of this workshop will be to provide a cross-section of perspectives on transversal dynamics such as the management of irrigated land in a context of (1) the agricultural economy changes and diversity of land tenure arrangements; (2) diversity and variability of natural resources; and (3) trend towards farmer empowerment and diversification of agricultural practices. The "world café" format will allow participants to contribute to the discussions on the three transversal themes, by moving between the three round tables.*

Moderators : Jean-Philippe VENNOT, Aurore MANSION and Olivia AUBRIOT.

Date, time and location : Wednesday November 23rd from 2 to 4 p.m., Badiane room.

Places available : 30.

## 9. Increasing efficiency and resilience and ensuring responsible governance in the framework of the agroecological transition of major irrigated areas

*Applying ecological and social principles simultaneously to the design and management of sustainable agricultural systems is the main objective of agroecology. However, ensuring the rehabilitation of large irrigated rice areas towards the agroecological transition is a major challenge according to the territory's reality. During this workshop, participants will be contextualized in a typical irrigated rice area of the West Africa, in order to identify diverse levers based on the FAO's agroecology principles. In particular, a focus will be done on the efficiency at the parcel scale, the resilience at the territory scale and the responsible governance at the national scale. This workshop will also be an opportunity to define the outlines of an ecosystem of services adapted to these transitions. The discussed points and proposals should provide elements for practicing engineers, managers and farmers, as well as for donors, with a view to changing agricultural practices in West Africa.*

Moderators: Dominique Olivier, Elise AUDIN, Christophe RIGOURD and Jean-Philippe FONTENELLE.

Date, time and location: Wednesday November 23rd from 2 to 6 p.m., Bambou and Passiflore rooms.

Places available : 40.

# List of participatory workshops

## 10. Relevance and feasibility of the improved proposals for sustainable hydro-agricultural management of bottom valleys

*Carried out in collaboration with CILSS PARIIS, the action on the agricultural valorisation and management of bottom valleys in West Africa has led to the emergence of new avenues aimed at guaranteeing a greater sustainability of these hydro-agricultural systems. This workshop aims at analysing the relevance and feasibility of the proposed tools taking into account an integrated vision of the issues they represent. The workshop will be organised by groups around 2 or 3 specific themes providing new guidances for the COSTEA team to finalise and update the standard termes of references for the management of bottom valleys.*

Moderators : Amandine HERTZOG, Jean-Louis FUSILLIER and Georges SERPANTIE.

Date, time and location : Thursday November 24th from 11 to 12:30 a.m., Badiane room.

Places available : 30.

## 11. Floodplain Consultatif Group

*Start-up of the Summary Note draft.*

Moderator : Jean-Philippe VENOT.

Date, time and location : Thursday November 24th from 11 to 12:30 a.m., Passiflore room.

Places available: 20.

## 12. Floodplain Management Games

*Floodplains require challanging management due to their multifunctionality : agricultural production and multiple ecosystem services whose dynamics are strongly affected by infrastructure construction for water resource control. These participatory workshops, that will be held in parallel, consist of two "serious games" designed to explore different management scenarios for the Daule watershed in Equador and the Upper Mekong Delta in Cambodia. These serious games were part of a broader approach to support stakeholders (farmers, local elected officials, administrative officials) in discussing the management of large flood plains. Participants will be put in a situation and use the serious games to identify management scenarios and discuss their implications in terms of equity and sustainability. These workshops serve as a starting point for a broader discussion on the design and implementation of stakeholder support approaches.*

Moderators : Jean-Philippe VENOT, Sylvain BLEUZE, Mathieu DIONNET and Malyne NEANG.

Date, time and location : Thursday November 24th from 2 to 4 p.m., Badiane and Bambou rooms.

Places available: 15 + 15 .

## 13. Feedback on the accompanying measures

*The aim of this workshop is to share experiences on the accompanying mesures for a more sustainable and equitable management of natural resources in high-stake areas, such as floodplains due to their multifunctionality. Discussions will focus on the "support posture" and the practical issues involved in implementing such mesures.*

Moderators : Jean-Philippe VENOT and Mathieu DIONNET.

Date, time and location : Thursday November 24th from 4:30 to 6 p.m, Badiane room.

Places available : 30.

# List of field trips

## 1. Visit of the INRAe PReSTI platform in irrigation sciences and technologies \*

*This platform studies traditional or innovative irrigation systems aimed at optimising their technological and agri-environmental performance throughout the water path, from the water intake to its arrival at the plant. It also studies the use of irrigation systems for the reuse of contaminated wastewater or additioned with fertilisers. As well, it develops irrigation management tools.*

Moderator: Claire SERRA-WITTLIG.

Date, time and location : Tuesday November 22nd from 3 to 5 p.m., Montpellier (Lavalette campus).

Places available: 45.

\* Translation into English will be considered.

## 2. Visit of the INRAe reuse of treated wastewater experimental platform \*

*This experimental platform allows to study the technical feasibility and to evaluate the agronomic, sanitary and environmental impacts of a wastewater reuse system for agricultural irrigation, with the aim of reducing the pollution pressure on the environment.*

Moderators: Sami BOUARFA and Nassim AIT MOUHEB.

Date, time and location : Friday November 25th from 2:45 to 6 p.m., Murviel-lès-Montpellier.

Places available: 50.

\* Translation into English will be considered.

## 3. Visit of the A. Dumont station and the remote management system of BRL network \*

*Visit of the Aristide Dumont station on the Pichegu site : the centrepiece of BRL's works for raising and transferring water from the Rhône river, as well as a presentation of the Information System used for the management and maintenance of the works.*

Moderators: Benjamin VENNAT and Etienne DRESSAYRE.

Date, time and location: Friday November 25th from 2:45 to 6 p.m., Nîmes.

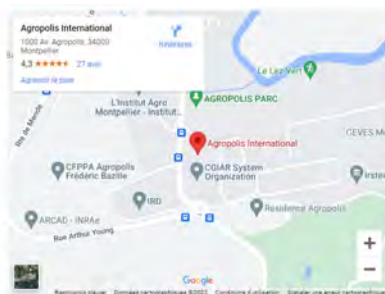
Places available: 50.

\* Translation into English will be considered.

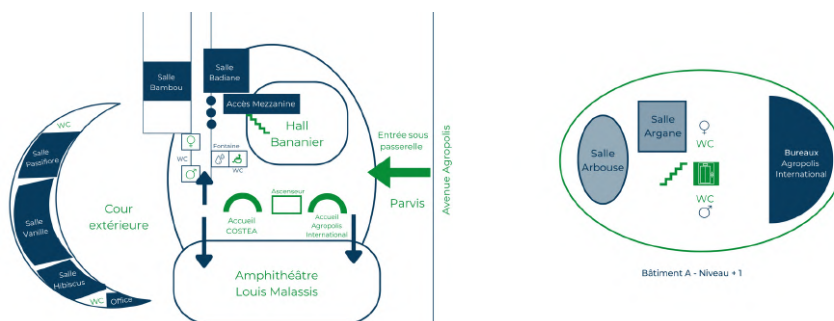
# Practical information

Event location :  
Agropolis International

1000, Avenue Agropolis 34394 Montpellier cedex 5 Occitanie – France  
+33 (0)4 67 04 75 75



Site map :



A shuttle service will be available to take you from the city centre to the event location.

Liste of hotels :

- Ibis Styles Montpellier Centre Comédie \*\*\*
- Royal Montpellier \*\*\*
- Ibis Montpellier Centre Comédie \*\*\*
- Best Western Plus Comédie Saint Roch \*\*\*
- Campanile Montpellier Centre Saint Roch \*\*\*

To follow the event in live streaming click [HERE](#)  
then enter the code : pfx8i5

For more information contact : [vittoria.milano@inrae.fr](mailto:vittoria.milano@inrae.fr)



# List of speakers

## Monday November 21st 2022

### Opening of the seminar

Welcoming words M. LE GRIX (AFD) and B. GRAWITZ (AFEID)

COSTEA presentation B. VENNAT (COSTEA/BRL)

Explanation of the seminar's proceedings V. MILANO (COSTEA/INRAe)

Round Table A. BETY (Presidency of the Republic of Niger), A. BAHRI (INAT), J.F. BLANCHET (BRL), C. LEJARS (CIRAD).

## Tuesday November 22nd 2022

### WAIDMA session

Transfer to irrigators worksite B. VENNAT (COSTEA/BRL) and T.HERTZOG (GRET)

Value chains worksite S. SECK (COSTEA) and G. MORIN-KASPRZYK (ACK International)

Land Tenure worksite S. SECK (COSTEA) and T. MANTET (SYLVATROP)

Project ownership worksite B. VENNAT (COSTEA/BRL) and S. LALOUX (CACG)

Round Table D. M. LAMINE (AFD), C. OUEDRAOGO (CILSS), K. FALL (ROA), S. EL HADJI (ONAHA)

### REUSE session

Welcoming word : presentation of the day's goals S. BOUARFA (COSTEA/INRAe)

Summary note E. EL MEKNASSI (COSTEA/Freelance consultant)

Cross-worksites analysis J. BERAUD (SCP) and B. NOURY (SCP)

Storytelling of the sites Y. NIANG (ISRA/CDH), H. BRAIKI (Freelance consultant), F. HAMAMOUCHE (ECA-BRDA Study and consulting office), B. SOUDI (IAV Hassan II), S. M. ALVAREZ CARRION (Freelance consultant) M. QADOUSS (ANERA)

Institutional benchmark P.L. MAYAUX (CIRAD)

Round Table M. BADISS (DIAEA), S. SASSI (DGREE) , O. SENE (Ministry of Water and Sanitation of Senegal), R. LAMBERT (INRAe)

## Wednesday November 23rd 2022

### Agroecological transitions in irrigated systems

Summary note S. BOUARFA (COSTEA/INRAe)

Illustrations of the note's recommendations by the worksites' realities K. ROESCH (AVSF), Justine Scholle (GRET), Hocine Irekti (INRA and TORBA), Adel Moulai (APEB), Laure Diallo (Enda Pronat), Eric Scopel (CIRAD)

### Services to irrigators session

Summary note J.P. FONTENELLE (Bordeaux Sciences Agro)

Restitution of the worksites in Cambodia J.M. BRUN (COSTEA/ARTE-FACT/IRAM)

Restitution of the worksites in Tunisia C. RIGOURD (IRAM)

### Land Tenure session

CTFD introductory remarks S. RUILLERE (AFD)

Summary note J. P. VENOT (COSTEA/IRD)

Teasers of the worksites in South East Asia M. BOUTRY (Freelance consultant)

Teasers of the worksites in West Africa T. MANTET (SYLVATROP)

Teasers of the worksites in Maghreb A. CHOIN-KUPER (Agroconcept)

# List of speakers

Explanation of the day's proceedings J. P. VENOT (COSTEA/IRD)  
Presentation of the worksites in South East Asia M. BOUTRY (Freelance consultant)  
Presentation of the worksites in West Africa T. MANTET (SYLVATROP)  
Presentation of the worksites in Maghreb A. CHOHN-KUPER (Agroconcept)  
South East Asia Round Table M. MELLAC (CNRS), O. AUBRIOT (CNRS) , F. BAZIN (IRAM) , C. ALLAVERDIAN (GRET)  
West Africa Round Table P. HOCHET (Insuco), S. EL OUAAMARI (AgroParisTech), E. KABORE (BagréPôle)  
Maghreb Round Table H. AMICHI (PURPAN), Q. BALLIN (AFD), A. DAOUDI (ENSA)  
Institutional Round Table A. SOW (SAED), Z. EL YACOUBI (Kingdom of Morocco, Ministry of the Agriculture), B. CHHEA (MoWRAM), M. BOCHE (AFD)

## Thursday November 24th 2022

Developing and managing floodplains in a context of global change session  
Summary note and restitution of the worksites in Cambodia J. P. VENOT (COSTEA/IRD)  
Restitution of the worksites in Equador S. BLEUZE (AVSF)  
Restitution of the worksites in Morocco G. LACOMBE (IAV Hassan II)  
Donors' intervention - to be *confirmed* -

Development and management of valley bottoms and small floodplains in West Africa  
Presentation of the action S. SECK (COSTEA/UGB)  
Implementation, hypotheses and main themes of the action J.L. FUSILLER (CIRAD)  
Restitution of the worksites in Burkina Faso G. SERPANTIE (IRD) et M. DAMA-BALIMA (CNRST)  
Restitution of the worksites in Mali J.L. FUSILLER (CIRAD) et A. MALE KOUYATE (Institut d'Economie Rurale)  
Restitution of the worksites in Niger A. ADAMCZEWSKI-HERTZOG (CIRAD) et T. HERTZOG (GRET)

## Friday November 25th 2022

Closing of the seminar  
Supporting collaborative groundwater governance E. HASSENFORDER (CIRAD)  
Final restitution challenge 1 Economic development A. BETY (Presidency of the Republic of Niger) and B. VENNAT (COSTEA/BRL)  
Final restitution challenge 2 Technical innovation and institutional reform A. BA (Thiès University) and S. SECK (COSTEA/UGB)  
Final restitution challenge 3 Environmental sustainability A. BAHRI (INAT) and E. EL MEKNASSI (COSTEA/Freelance consultant)  
Final restitution challenge 4 Resilience Q. BALLIN (AFD) and J. P.VENOT (COSTEA/IRD)  
Closing remarks AFD and AFEID Q. BALLIN (AFD) and S. BOUARFA (COSTEA/INRAe)

# List of participants

ABUALFAILAT Malek  
ADAMCWESKI- HERTZOG Amandine  
ADOU KOUABENAN Etienne  
AGUILHON Léna  
AIT-MOUHEB Nassim  
ALLAVERDIAN Céline  
ALOUSSI Nabil  
ALVAREZ CARRION Sergio Marcelo  
AMICHI Hichem  
ATTA Ernest  
AUBRIOT Olivia  
AUDOUIN Elise  
AVINTAGO Mor  
AYEWOH Ignatius O.  
BA Alassane  
BA Alpha  
BADISS Mahmoud  
BAHRI Akiça  
BALLIN Quentin  
BAZIN Frédéric  
BEKADDOUR Sara  
BEKKAOUI Faouzi  
BERAUD Jacques  
BETY Ali  
BLANCHET Jean-Francois  
BLEUZE Sylvain  
BOCHE Mathieu  
BONKOUNGOU Jacques  
BOUARFA Sami  
BOUTRY Maxime  
BOUYER Olivier  
BRAIKI Housseem  
BRELLE François  
Burger Leenhardt Delphine  
BURTE Julien  
CEDAT Sylvain  
CHAN Saruth  
CHHEA Bunrith  
CHIV Sunheng  
CHOHIN-KUPER Anne  
CHOUKRANI Hajar  
CISSE Souleymane  
COLIN Jean-Philippe  
DAOUDI Ali  
DARE Williams  
DAURENSAN Nicolas  
DIAKITE Mohamed-Lamine  
DIONNET Mathieu  
DOUSSOUE Pison  
DRESSAYRE Etienne  
EL HADJIDANGO Saminou  
EI MAHADI Souleyman M.  
EL MEKNASSI Ehssan  
EL OUAAMARI Samir  
EL YACOUBI Zakaria  
ELHADJI SEYBOU Djibo  
ELLOUMI Mohamed  
FALL Khaly  
FERNANDEZ-MENA Hugo  
FONTENELLE Jean-Philippe  
FRANCOIS Jean-Luc  
FUSILLIER Jean-Luis  
GABOUJ Rhida  
GEHENIAU Nicolas  
GHARBI BENTEKAYA Najet  
GILARD Olivier  
GRAWITZ Bruno  
HAMAMOUCHE Meriem Farah  
HAMDANE Abdelkader  
HAMET Keita  
HAMMANI Ali  
HERTZOG Thomas  
HOCHET Peter  
HOFMANN Alexia  
IMACHE Amar  
JAMIN Jean-Yves  
JOUINI Meriem  
KABORE Etienne  
KAMATE Amédé  
KATO KAYIZZI Ronald  
KEITA Hamet  
KHARDI Yassine  
KHLIEF Emad  
KOKORA Gowa Paul  
KOULBOU Abedelkerim Adam  
KUPER Marcel  
LACOMBE Guillaume  
LAHLOUH Abdullah  
LALOUX Solène  
LAMBERT Gabriel  
LE GRIX Matthieu  
LECOLINNET Julien  
LEGENDRE Rémi  
LEJARS Caroline



# List of participants

LY Oumar  
MAGANA Maria  
MAHAMANE Adamou  
MALE KOUYATE Amadou  
MALERBE Florence  
MAMOUDA Mahaman Bachar  
MANSION Aurore  
MANTET Thomas  
MARIKO M'Boua  
MAYAUX Pierre-Louis  
MBAYE Tamsir  
MELLAC Marie  
MILANO Vittoria  
MORADET Silvie  
MORIN-KASPRZYK Gabriel  
MOUHIB Hafssa  
MUAZU MAFINDI Abdulazeez  
NDAO Seyni  
NDAO Pape Malick  
NEANG Malyne  
NIANG Younga  
NIANG Voulimata  
NOURY Benjamin  
OROH Roland O.  
OLIVIER Dominique  
ORIESCHNIG Christina  
OUEDRAOGO Clément  
OUEDRAOGO Saidou  
OUEDRAOGO Hubert  
P. R. MARTINS Eduardo Sávio  
PAPIN Celine  
POMMIER Paola  
QADOUSS Naser  
QUESNE Gaetan  
RAKHIMJONOV UGLI Nodirbek  
RAVAUX Charlotte  
RIGOURD Christophe  
RIVEROS Paola  
RODRIGUEZ Eduardo  
ROESCH Katia  
ROLLIN Dominique  
RULLIERE Sandra  
SAMHAN Subhi  
SASSI Souaad  
SAVEY Pierre  
SAWANDOGO Victor  
SCHIETTECATTE Laure-Sophie  
SCHILL Marie  
SECK Sidy  
SENE Oumar  
SFERRATORE Agata  
SHAROPOV RAJABOVICH Ravshan  
SIDI DOUSSOU Sidi Mahmoud  
SIDIBE Hamadoun  
SIDINA ABDI Mohamed  
SOUAD Sassi Dekhil  
SOUDI Brahim  
SOW Aboubacry  
SY Cheikh Tidiane  
TAKY Abdelillah  
TANGUY Vincent  
TOGOLA Mamadou  
URRUTY Nicolas  
VANDOME Paul  
VENNAT Benjamin  
VENOT Jean-Philippe  
WATANABE Noemie  
YANKSON Philemon  
ZAHRAOUI Khaoula  
ZIDA Moussa

