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Family farming

Large-scale agricultural investment and water resource sharing for irrigated rice cropping in Mali

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▲ Irrigation infrastructures built by a private investor.

As pressure on agricultural and food markets increases, vast areas of arable land in Africa are attracting a growing number of international investors in a phenomenon often referred to as 'land grabbing'.

In the irrigation area administered by the *Office du Niger* (Mali), in addition to competition for land, the arrival of investors has prompted a redefinition of the terms of access to water, an essential resource for irrigated rice production. 600 000 ha of land is currently being allocated to investors, i.e. sixfold the currently developed area, while more than 80% of the Niger River flow is already being used for irrigation purposes during some periods of the dry season. This leaves very little leeway to meet future water needs.

Sharing of water supplies between different stakeholders is both a technical and social issue. Family farmers, who have made this rice-growing area a success, see their future becoming increasingly precarious due to the lack of access to information and of leverage in resource allocation negotiations.

In this setting, UMR G-EAU is conducting action research with the following objectives:

- to analyse and compare land management practices of family farmers and investors
- to assist stakeholders in identifying the long-term challenges and foreseeing the impacts of new land allocations on the functioning of the irrigated system.

UMR G-EAU and the *Institut d'Économie Rurale du Mali* conducted a participatory prospective awareness initiative. Different stakeholder groups participated in scenario-building workshops and role playing games. Family farmers, who had until then not been substantially involved in any long-term thinking, were able to exchange information and views on the future. This ultimately enabled them to imagine possible development scenarios for the next 20 years and debate guidelines to move towards the future in the most suitable way, while ensuring the sustainability of the family farming model and preserving the resources.

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Irrigated agriculture—adaptation to global changes and impacts on water resources in North and Sub-Saharan Africa

The joint research unit *Water Resource Management, Actors and Uses* (UMR G-EAU, AgroParisTech/CIHEAM-IAMM/CIRAD/IRD/IRSTEA/Montpellier SupAgro) conducts research on water resource management arrangements at different scales (catchment basin to irrigated plot). The aim is to test levers to balance water resource preservation and sustainable development. Research carried out at the interface between water resources and uses is multidisciplinary, ranging from earth sciences (hydrology, hydraulics), engineering (automation, fluid mechanics), life sciences (agronomy, hydrobiology), human and social sciences (economics, sociology, political science). The social dimension of agricultural water

use has led the unit to focus on differentiating types of production and their scope for water access and management.

The unit conducts research along three lines, two of which concern the quantitative dynamics of water resources and their strategic and operational management. The third line deals with irrigated agricultural systems, their adaptations to global changes, impacts on water resources and ways to enhance their performances via technical or organizational innovations. Forms of social organization of agricultural production are also taken into account, while focusing on how family farms change to cope with modernization in order to intensify their production, and the increase in more capital-intensive, and potentially competing, production structures.

In irrigated agriculture, as in the entire agricultural sector, 'family farming' structures—based on family control of farm production

and management—still prevail worldwide. By mobilizing costly water development projects, irrigated agriculture implies intensification and high added value crops. The current pressure on cereal markets due to growing global demand has questioned the capacity of family farms to modernize in order to make effective use of these development projects. UMR G-EAU addresses these issues of changes in production structures and tension over land and water access in North Africa, Sub-Saharan Africa, and Asia.

The research is focused on agrarian dynamics and associated social and economic challenges, supporting the design and dissemination of innovations in irrigated cropping systems adapted to small family farms, participatory and prospective approaches to integrate smallholders in water resource sharing negotiation and coordination processes. ●●●