



Competing for Water

Conflict and cooperation in local water governance

Description of research locations

The Competing for Water programme works in five research locations:

- Tiraque District, Bolivia
- Condega District, Nicaragua
- Con Cuong District, Vietnam
- Douentza District, Mali
- Namwala District, Zambia

The following criteria¹ were used as the basis for constructing sample of research locations:

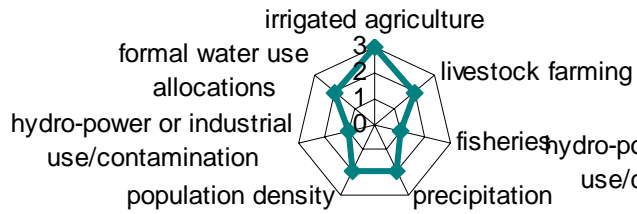
- Continent
- Population density
- Precipitation
- Importance of formal water use allocations
- Importance of irrigation
- Importance of livestock keeping
- Importance of fishery
- Industrial water use (including hydro-power and pollution)

Based on these criteria, sites were selected jointly through a consultative process among the Competing for Water research partners.

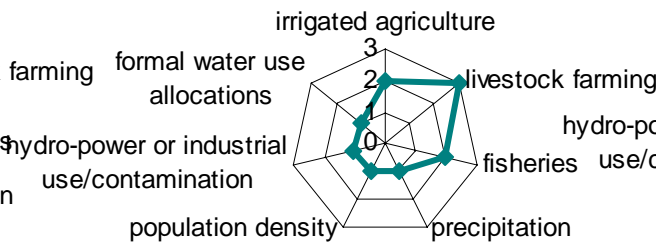
The diagrammes below summarize selected key features of the five research locations, and graphically illustrates the heterogeneity of the sample.

¹ In addition, since funding was obtained from the Danish Development Research Council, Ministry of Foreign Affairs, priority was given to research locations in Danida programme countries and in countries within which DIIS as the lead institution had previous research experience or established research partnerships.

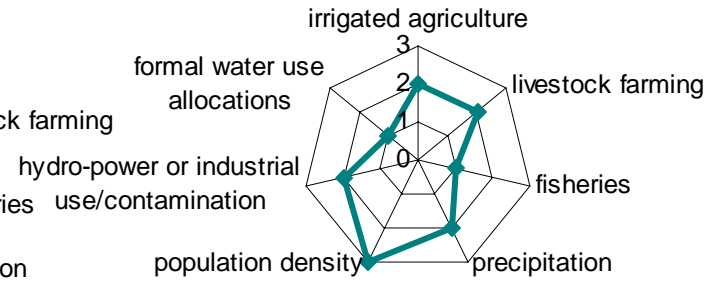
Tiraque District, Bolivia



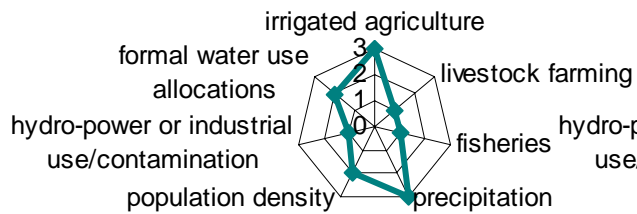
Douentza district, Mali



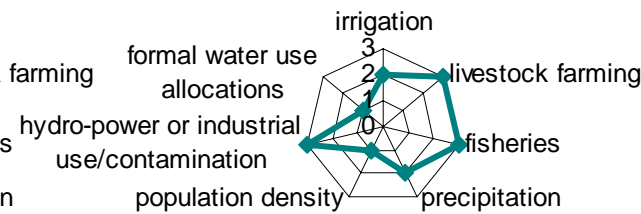
Condega district, Nicaragua



Con Cuong District, Viet Nam



Namwala district, Zambia



Diagrams showing selected key characteristics of research locations

1 = none or limited/low/<500 mm/<15 persons/km²;
2 = some/somewhat important/500-1500 mm/15-75 persons/km²;
3 = a lot/very important/>1500 mm/>75 persons/km²)

Brief descriptions of research locations

Tiraque Valle, Bolivia

The Tiraque Valle is a rural area situated in the Tiraque Province, Department of Cochabamba (central Bolivia), with a population of 20,907 for an area of 680 km².

Agriculture constitutes a vital source of livelihood, and crops cultivated are, among others, potatoes, peas, broad beans, maize, wheat. Half of the agriculture is irrigated. Livestock keeping is the second economic activity, with mostly sheep and cows. There are no fisheries in the Tiraque Valle.

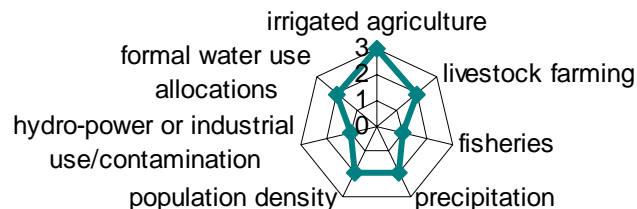


Key water management issues in Tiraque include water allocation and water pollution due to the watering of livestock. There is a growing competition on water access. An irrigation law was passed in 2004 for water rights to be obtained for productive purposes. However, the process of formalization of this law has been questioned, especially regarding the permanence of some use rights.

Water conflicts in Tiraque include conflicts between communities over rights to irrigation systems, or over the construction and improvement of irrigation systems.

Agreements between communities, also based on autonomous local management mechanisms known as “uses and customs” have developed over time. However, over the past years these agreements have come to be contested.

Tiraque District, Bolivia



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Douentza Area (cercle), Mali

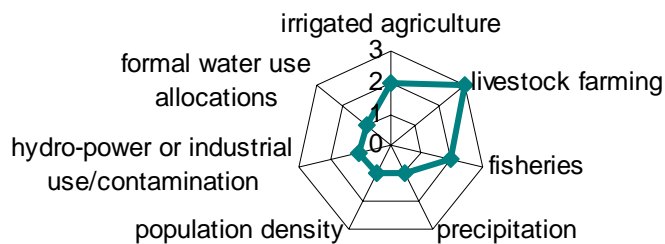
The Douentza Area is a rural area situated in the Mopti region (central Mali), with a population of 166,543 inhabitants for an area of 18,903 km².

Pastoralism and agriculture constitute vital sources of livelihood. The livestock kept is mainly cattle and small livestock (goats). The crops cultivated are mainly millet and vegetables. Fisheries are a small industry in Douentza.



Key water management issues in the Circle include water scarcity and water allocation. Although Mali is involved in an Integrated Water Resources Management process, the allocation of water is made difficult due to the lack of communication between sectors and within the water sector, and in some cases, by conflicts of competences between institutions. The capacities of the water sector actors are limited. The weak implementation of the Water Code (2000), the low level of awareness of legal texts (several legal texts influence water use and management in different sectors, e.g. the Land Code, the Pastoral Charter etc.) as well as problems in operation, maintenance and management of infrastructures contributes to uncertainty in water allocation.

Douentza district, Mali



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Current water conflicts in Douentza include disputes over the access to and use of water between pastoralists and farmers (access to and location of water points, for instance), between fishers and pastoralists, between fishers and farmers, among pastoralists and among fishers (access to lakes, for instance). Conflicts also take place between or within communities over the location of water points, and between local users and hydropower authorities.

Customary authorities play a major role in issues related to fishing and pastoralism, with local headmen and authorities in charge of conflict resolution.

Condega District, Nicaragua

Condega district is a small rural district (398 km²) situated in northern Nicaragua. It is home to a population of approximately 30,000 persons of whom two-thirds live in rural communities and the remaining third live in Condega town.

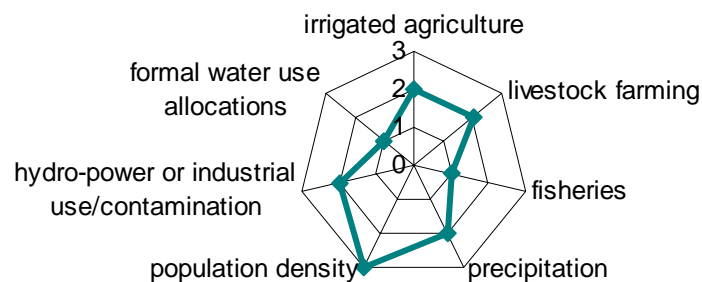
Altitude ranges from around 520 m.a.s.l. to close to 1,500 m.a.s.l. with the Pan-American highway cutting across the district, dividing it into a western low-lying and semi-arid part and an eastern high-altitude and more humid part.



Farming, often combined with livestock keeping constitutes an important source of livelihood as do seasonal and more permanent migration to neighbouring regions and countries. Irrigation – both medium-scale motorized irrigation using river water for the cultivation of tobacco and small-scale gravity-based irrigation using water for the numerous natural springs in the mountains for the cultivation of potatoes, tomatoes, etc. during the dry season – is becoming still more important.

Key water management issues include lack of drinking water, contamination of drinking water as well as of river water used for bathing, drinking water for livestock, washing of clothes, etc. from the run-off of agricultural chemicals as well as from tanneries located close to Condega town.

Condega district, Nicaragua



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Water governance in Nicaragua is currently entering into a period of transition from a situation characterized by a combination of riparian and prior use rights to water to a new regulatory framework based on water use licenses for consumptive and non-consumptive uses other than simple domestic use.

Con Cuong District, Vietnam

Con Cuong District is a rural district situated in the Nghe An Province in the North of Vietnam, with a population of 64,935 for an area of 1744 km².

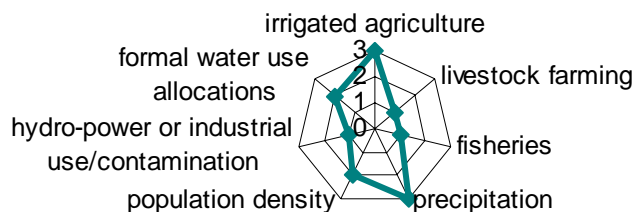
Although the major part of the district is covered with forest, irrigated agriculture on the remaining 355 km² constitutes a vital source of livelihood, with crops such as rice, maize, sweet potato, cassava, sugar can, peanut and vegetables. Livestock farming (mainly poultry and pigs) is another source of income. Fisheries are a minor industry due to the lack of flood plains in the area. However, a significant amount of fish and prawn is annually exploited in the rivers. Industries have not developed, apart from timber processing.



Con Cuong District, Viet Nam

Key water management issues in the District include water scarcity (despite a high precipitation, there is unequal distribution both in time and space and lack of storage), water pollution and water allocation. The lack of explicit and transparent rules for

water allocation and licensing leads to uncertainty. Inadequate coordination across sectors at the national, provincial and local level and limited capacities of provincial and district staff within the decentralization of water resources management programme is also problematic. Finally, insufficient investment in the operation, maintenance and management of hydraulic works has resulted in low performances.



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Water conflicts in Con Cuong include conflicts about permits for water use, between farmers over irrigated water use, and conflicts about water over-exploitation or pollution. In some ethnic groups, customary laws are applied and conflicts are first solved at a local level, by the village headmen or the water manager responsible for water allocation.

Namwala District, Zambia

Namwala District is a rural district situated in the Southern Province of Zambia, with a population 83,000 in an area of approx.10,000 km².

Pastoralism constitutes a vital source of livelihood, based on the annual flooding of the floodplains of the Kafue River (the Kafue Flats). Artisanal fisheries is another important source of income, while farming is gaining importance in parts of the district.



Key water management issues in the District include water scarcity during the dry season and changed flooding patterns as a result of upstream hydropower generation. Upstream pollution from Zambia's cooper industry is a further (though poorly documented) issue, while recent years have seen flooding disasters as a result of unusual rainfall patterns.

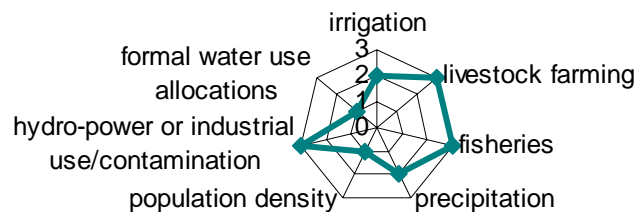
Current water conflicts in Namwala include disputes between the use of water for pastoralism and irrigation/farming, as well as between communities over the location of water points, and between local users and hydropower authorities.

Local collaborative mechanisms include unwritten customary schedules for livestock movement and farming, and dispute resolution through local headmen.

At the river basin level, a collaborative mechanism has been established for stakeholder negotiation in flood regulation.

The Zambian water sector faces major challenges in terms of technical, financial, and institutional capacity. Efforts to address these issues are ongoing but are constrained by various factors, including a current slowing down of the planned decentralization process.

Namwala district, Zambia



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