



Actes

Proceedings



From conflict to equity:

Handling the challenge of multipurpose use of ground and surface water in Indonesia

Jean-Marie Lopez (CIRAD, UMR G-EAU, jean-marie.lopez@cirad.fr), **Robin Bourgeois** (CIRAD, UPR Politiques et Marchés, robin.bourgeois@cirad.fr), **Bruno Lidon** (CIRAD, UMR G-EAU, bruno.lidon@cirad.fr), **Yann Brault** (Danone-Aqua, CSR, yann.brault@danone.com), **Budi Kartiwa** (IAHRI, bkartiwa@yahoo.com), **Hendri Sosiawan** (IAHRI, hsosiawan@yahoo.com)

Introduction

The Klaten district in Central Java is one of the main Indonesian “rice baskets”. In irrigated areas, farmers grow rice 2-3 times per year with average yields of 5-6 t/ha. Water mainly comes from weirs built along river streams and is conveyed to plots through open canals. During the dry season (June-October), numerous springs supply the rivers. Ground water is only used by a small number of farmers for additional irrigation. Since the middle of the 1990’s, the area cropped during dry period is decreasing due to recurrent water shortage induced by rising withdrawals for non agricultural purposes. In the Pusur watershed, a 100 km² area, 12000 smallholders cultivating 3000 ha share the water resources with two water companies. A public company (PDAM) takes 400 l/s and supplies the growing cities of Solo and Klaten from a spring whose debit is higher than 1000 l/s. A private company, Danone-Aqua (DA), takes 64 l/s from an artesian deep borehole for its production of bottled water. Water abstraction permits are delivered by the Energy and Mineral Resources Department, once an environmental assessment document is validated by local stakeholders; permits are reviewed every five years. A locked volume-meter provides yearly abstracted volume data to the authorities.

During the dry season, water scarcity strongly affects farmers’ income and impacts on the fulfillment of villagers’ domestic needs. Water access conflicts appeared in the early 2000s between WUAs and expanded to water companies. In 2005, farmers groups and local NGOs blamed DA for the growing scarcity of water in the Kapilaler perimeter (415 ha) supplied by a spring located nearby the DA borehole. They maintained accusations despite an environmental assessment showing no geo-hydrological connection between the spring and the borehole. Assuming that these claims were reflecting above all a general deterioration of agriculture environment, DA decided to support the development of alternative water management practices and innovative cropping systems. Within this scope, CIRAD intervened with its national research partners to raise actors’ awareness of water resources degradation and water access conditions.

Key words: Crop irrigation, water access, multipurpose use, conflict management, multi-stakeholder platform, modeling participatory, collective action.

Materials and method

In such a tense situation, CIRAD formed and led a facilitation team that developed a stepped approach driving actors to overcome their partial and differing views and rather inflexible postures. This approach focused on the emergence of a global and shared vision of water

access conditions and uses and of limiting factors. This vision was then turned into a co-construction process so as to enable actors to collectively identify integrated and sustainable ways to match the management of irrigated systems with water resources availability. To promote the progressive institution of collective action, the approach relied on multi-stakeholder platforms, community workshops, monitoring committees; all supported by the outputs of multidisciplinary and participatory rapid appraisals and related modeling tools. The approach was successively conducted at regional and perimeter scales in order to allow stakeholders to reposition local water scarcity issues in the more global context of water resources availability and of their multipurpose uses at watershed scale.

Discussion-Conclusion

The distinctive feature of the stepped approach was an iterative shift between interrelated spatial scales and between studies and interactions with stakeholders. The close association of field research and multi-stakeholders' debates, including technical, economic and organizational aspects, helped to both appease conflicts and collectively build a program of actions. By shifting actors' concerns out from the narrow geographic area of initial conflict to the more global issues of water access in the region, the approach provided them a broader view that in turn helped actors to refocus on the specific question of water shortage using the former conflict area as a pilot case. The integration of the multiple dimensions of the local water access constraints into a single model and simulations of alternative options facilitated the emergence of a shared vision and a collective decision making.

With the support of DA, funds were immediately accessible to turn this vision into field actions leading to tangible results, such as upgraded structures and agronomic demonstration plots under farmer conditions. The collective dynamics strengthened and led to the creation of a new organization the PADIKA that played a crucial role in the establishment of a new water management and cropping system regulation. WUA representatives who are facing the same problems in the basin of the neighboring Pusur River requested to scale up the approach to the group of nine perimeters supplied by the river. In response, an approach integrating also watershed management has been proposed in order to manage and sustain ground and surface water resources while ensuring water access equity. A comprehensive hydro-geological survey will start in 2011 to complete data from the 2007-2008 preliminary studies and better characterize the aquifer system. Its outcomes should enable stakeholders to enact sustainable water management rules that account for the balance between renewable water resources and water withdrawals.

References

- Gurung, T. R., F. Bousquet and *al.* (2006). Companion modeling, conflict resolution, and institution building: Sharing irrigation water in the Lingmuteychu watershed, Bhutan. *Ecology and Society*, 11(2): 36
- Le Grusse, P., H. Belhouchette and *al.* (2006). Participative modelling to help collective decision-making in water allocation and nitrogen pollution: application to the case of the AveyronLere Basin. *International Journal of Agricultural Resources, Governance and Ecology*. vol. 5, n. 2-3, p. 247-271. Symposium Territoires et Enjeux du Développement Régional, 2005/03/09-11, Lyon (France).