Exploring opportunities for sustainable expansion of groundwater use in the lowlands of Laos

Project Area: Laos (lowland plains)
Timeframe: July 2019 – December 2020 (Initial Phase)
Financial Support: Australian Centre for International Agricultural Research (ACIAR)
Partners: International Water Management Institute, Flinders University / National Centre for Groundwater Research and Training, National University of Laos (Faculty of Water Resources), Lao Department of Water Resources, Lao Department of Irrigation

Background

The lowlands of Laos support around 70% of the population, have by far the greatest potential for expansion of market-oriented agriculture. The lowlands are also prone to drought and regularly face water shortages. Groundwater, which is available year-round offers a potential solution. Communities situated far from reliable surface water supplies could benefit greatly if groundwater use could be sustainably expanded, particularly for irrigation by smallholders.

The national agricultural development strategy [1] recognizes the lowlands as a priority for expansion of livelihood enhancing actions, including diversified cropping. A commitment to enhancing climate resilience in drought-prone areas means that irrigation could evolve as a major user of groundwater. However, information on the aquifer systems is extremely limited, which greatly constrains proper planning and development. Another limitation is the groundwater pumping costs, particularly for diesel pumps. Earlier research [2,3] revealed substantial promise for groundwater to enhance livelihoods in rural Laos however further work is needed to better understand how groundwater irrigation can support agricultural development.

Goal

Explore the opportunities for sustainable expansion of groundwater resources within the lowlands of Southern and Central Laos for livelihood enhancement and climate change adaptation.

Activities

1. Field surveys to select several focal sites in the most promising aquifer typologies in the lowlands;
2. Initial investigations towards establishing groundwater development potential;
3. Review of small-scale solar powered pumped irrigation from groundwater; and
4. Review of groundwater planning and development practices.

Outcomes

1. Improved understanding of the groundwater resource development opportunities in selected areas
2. Assessment of groundwater development and management under different contexts
3. Methods for defining and assessing sustainable development and avoidance of negative environmental impacts
4. Strengthened technical capacity within government, universities and other important stakeholders

Further Information

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[1] *MAF (2015) Agriculture Development Strategy to the year 2025 and Vision to 2030. Ministry of Agriculture and Forestry (MAF), Government of Lao PDR.*
[2] *Completed ACIAR Project LWR/2010/081 https://www.aciar.gov.au/project/LWR-2010-081*
[3] *Society of Exploration Geophysicists SEG supported project: Geophysics to enhance agricultural productivity and livelihoods of smallholder farmers through improved groundwater management of the Vientiane Plain, Lao PDR https://library.seg.org/doi/abs/10.1190/segam2018-2998321.1*