Producing knowledge together for recovery of wetlands, agroecological farming and livelihoods in Southeast Asia

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Policy Pointers

A contemporary sustainability challenge in Southeast Asia is how to protect wetlands and support associated agroecological farming practices for regional resilience

Knowledge coproduction is a promising methodology to co-design and undertake research projects jointly between researchers, state and non-state actors that meet their shared goals, and that ultimately produces usable knowledge for real-world problems

Knowledge co-production methods can foster trust and collaboration in cases where there has been a history of conflict, but only within limits

Capacity for knowledge coproduction needs to be built amongst researchers in Southeast Asia and with stakeholders with whom they collaborate

Farmers collect freshwater fish in the floating rice fields during the flood season in the Mekong Delta, Vietnam (Credit: Huynh Ngoc Duc)

The Mekong Region contains extensive wetlands of great biodiversity that provide a wide range of ecosystems services and that are also important to human well-being (ADB, 2012). Within these wetlands, local communities often practice agroecological farming, including growing rice and vegetables, animal raising, fishing, and collecting non-timber forest products. Unfortunately, many wetlands in the Mekong Region have been degraded or even lost, including due to agricultural intensification, large-scale water infrastructure development, and land use changes associated with urbanization (Hughes, 2017). The loss of wetlands is a threat to regional sustainable development. Furthermore, as wetlands are lost, so too is the local knowledge associated with their ecosystems and how to practice agroecological farming there.

In this policy brief, we detail the process and outcome of a "knowledge co-production" research project in Thailand, Vietnam and Laos intended to contribute towards the recovery and more inclusive governance of degraded wetlands and associated agroecological farming systems and livelihoods. Knowledge co-production refers to a designed process that encourages interaction amongst multiple stakeholders. Each contributes their own knowledge and experience, and as a result of this interaction new knowledge is created to influence decision-making and outcomes on-the-ground.

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It is now widely recognized that addressing real-world complex environmental problems, such as wetland loss, requires a range of different types of knowledge, including scientific (expert), local, practical, and political knowledge. Lorrae van Kerkhoff and Louis Lebel astutely observe that it is "*… the interaction between research and other sources of knowledge that is often crucial for understanding the role of research-based knowledge in action*" (van Kerkhoff and Lebel, 2006:448). In other words, in the real world, expert knowledge alone is not enough for taking decisions that would lead towards decisions and actions on-the-ground for inclusive and sustainable development.

Emerging from this recognition, there is now growing experience amongst researchers who would like to see their work meaningfully translate into action for sustainability. They are exploring how "knowledge co-production" approaches to their research can catalyze interaction amongst researchers and multiple state and non-state stakeholders to can create useful knowledge together. For such a process to be successful requires a shared understanding of the problem amongst all the stakeholders, a genuine constituency formed to solve it, as well as appropriate representation, capacity, trust, and commitment to learning amongst the individuals involved.

In this policy brief, we briefly outline the main findings from our work applying a "knowledge co-production" approach to three cases in Thailand, Vietnam and Laos. The first case focuses on collaborative wetland zoning and educational tourism at the Rasi Salai and Hua Na Irrigation projects in Si Sa Ket Province, Northeastern region of Thailand. The second case addresses four floodplain floating rice fishing-vegetable agro-ecological systems in An Giang province and Dong Thap province, Vietnam. The third case is on transition to organic rice production in two villages in Xaybouly district, Savannakhet Province, Laos.

"Knowledge co-production" as research method

Our research method aimed to encourage learning through knowledge co-production in which our research team engaged with other stakeholders in an iterative process of research and action.

In each case study location, stakeholders were first identified by the research teams including communities, government agencies, civil society groups, and business (Table 1). We first undertook qualitative scoping surveys with each stakeholder to define the diverse visions, goals, values and beliefs towards the wetlands and the associated agroecological farming system. An initial analysis defined areas of agreement and divergence amongst stakeholders (Smajgl and Ward, 2013). This led to inception workshops in each location that bought all stakeholders together and initiated a co-design process. At the workshops, participants shared perspectives and deliberated goals and potential research projects.

The inception workshop and subsequent activities and meetings can be understood as intentionally created "arenas of knowledge co-production" (van Kerkhoff and Lebel, 2006). Within these arenas we encouraged the open sharing of knowledge; inclusiveness of multiple types of knowledge (expert, local, practical, political); and an exploration of the legitimacy of different types of knowledge (Frantzeskaki and Kabisch, 2016). Whilst power imbalances inevitably persisted between stakeholders, the research team were consciously attentiveness to power relations through the design of the process to ensure inclusivity (Schuttenberg and Guth, 2015).

Upstream of the Rasi Salai Dam, Si Sa Khet Province, Thailand (Credit: Carl Middleton)

Following the inception workshop, divergent pathways were taken in each country, according to the proposed project emerging from the inception workshops as briefly summarized in the following sections.

Table 1: Stakeholders collaborated with at each case study			
	Rasi Salai and Hua Na dams, Thailand	Floating rice, Vietnam	Organic agriculture, Laos
Community	Community leaders from Nong Kae sub-district	116 households growing floating rice	25 farming households
Civil society	Khon Taam Association, Taam Moon project	Farmers' association at four communes, and district	
Local government	Nong Kae Sub-district Administrative Organization	Vinh Phuoc and Luong An Tra People's committee (commune), Tri Ton district people's committee; My An and Tan Long people's committee	
State agencies	Royal Irrigation Department (RID), and several related line agency offices	Department of Environment and Natural Resources and Department of Agriculture and Rural Development	Provincial Agriculture and Forestry office (PAFO) and District Agriculture and Forestry office (DAFO)
Business		Rice producers, traders and nutritional business, Tourist companies	Resettlement Management Unit of the Nam Theun 2 Power Company (NTPC)

Collaborative wetland zoning and educational tourism in Northeast Thailand

In 1993, the Rasi Salai irrigation dam was built on the Mun River in Si Sa Ket Province, Northeast Thailand that would lead to over two decades of at times intense conflict between the communities whose livelihoods were harmed by the project and the government agencies that built and operated it. In response, affected communities organized protests, including occupying the dam for 189 days in 2007, after which the government began to provide long-promised compensation. Since 2012, there have also been activities to recover degraded wetlands for food security and ecological services, demonstrate local development activities (organic agriculture/green market), and promote integrated farming system and fish conservation.

Following several rounds of individual meetings with each stakeholder (Table 1) in February 2015, a joint workshop, held in late March 2015, and several follow-up workshops led to an agreement that the research would focus on two themes: Following several rounds of individual meetings with each stakeholder (Table 1) in February 2015, a joint workshop, held in late March 2015, and several follow-up workshops led to an agreement that the research would focus on two themes:

- Collaborative wetland zoning, on the basis that there was a shared perceived need to clearly categorize the wetland area affected by the Rasi Salai dam, and designate permitted uses within it.
- Educational ecotourism, which was particularly supported by the community-based organizations, who had recently opened a "community learning center" nearby to the Rasi Salai dam.

For the collaborative wetland zoning, another workshop in mid-June 2015 finalized the research strategy that allowed for the diverse forms of knowledge of those involved, ranging from GIS techniques by the government agencies, to knowledge of local ecosystems and their uses amongst the communities. The research itself was collaboratively undertaken over three days, and in three subsequent workshops the group verified the data. The degree of collaboration between the state and non-state stakeholders was acknowledged amongst all as unprecedented.

However, it soon emerged in the post-mapping meetings that wetland zoning remained a contested issue between the groups participating. In addition, long-standing disagreements over the level of water in the reservoir also reemerged. Thus, despite the goodwill generated on all sides through the collaborative research, it became apparent that more time and resources beyond the scope of the project would be required to work through the issues.

For the educational tourism, over a series of meetings, tourism experts from the Faculty of Liberal Arts, Ubon Ratchathani University worked with the stakeholders. In this project, civil society and community members emerged as most active over time as it was intended that students would come to stay at the community learning center near the Rasi Salai Irrigation Dam. The community members prepared an ecotourism brochure, agreed tourist hot spots and stories associated with each place, designated tour guides, and prepared various logistics. Over the subsequent year, at least five tours were hosted that included university students, NGOs, academics and independent researchers. The educational tourism raised the profile of the wetlands as a resource for local livelihoods and ecological services for the visitors. Community members could generate income from the activity, whilst government officers accomplished their mandate on sustainable wetland management.

Floodplain floating rice based wild fish and vegetable agro-ecological systems in Mekong Delta, Vietnam

Deepwater rice – also known as floating rice – is native to the Mekong River Delta in Vietnam. Before 1975, the total area of floating rice was estimated to be greater than 500,000 hectares;

Stakeholders workshop on building ecological tools for improving the value of floating rice in Cho Moi district, Vietnam (Credit: RCRD)

Water melon production in wetlands alongside the reservoir of Rasi Salai dam (Credit: Carl Middleton)

by 1994, this had reduced by 80 percent, and as of 2012 only very small pockets of tens of hectares remain, mostly in An Giang province (Nguyen et al, 2015). The reduction is linked to Vietnam's agricultural policy promoting agricultural intensification including introduction of high yielding variety (HYV) rice and extensive dike construction (Nguyen and Pittock, 2016). This increased food production for domestic consumption and export, but also created a range of environmental and health challenges including growing agrochemical pollution and reduced soil fertility (Käkönen, 2008).

In order to map out the opportunities and challenges faced by floating rice farmers on the ground, and to co-design an intervention, Participatory Rural Appraisal (PRA) was first undertaken between December 2014 and March 2015 in four communities: Vinh Phuoc and Luong An Tra communes of Tri Ton district, and My An commune of Cho Moi district, An Giang Province; and Tan Long commune of Thanh Binh district, Dong Thap province. In addition to the 126 farming households who cultivate floating rice, the research team worked together with the state agencies identified in Table 1. Analysis of quantitative data from the PRA found that although relative to HYV rice the yield of floating rice is low, when combined with dry season agriculture (cassava/ leeks/ chili/ corn) the annual economic value of floating rice–based farming generated more financial returns to farmers per hectare.

A shared objective amongst boundary partners that emerged from the PRA and several workshops was to improve the marketing of floating rice. They proposed to emphasize that floating rice production is nutritious, tasty and without chemical input.

Therefore, the researchers worked with farmers to promote floating rice via the local media, conferences, workshops, and the floating rice harvesting festivals, and to connect farmers directly to consumers as well as rice traders. Before the project in 2014, in Tan Long and My An communes, most farmers only cultivated floating rice to feed animals (stems from rice) or to sell to sell to local customers who are old people or religious groups in various temples in Ho Chi Minh city, and in other sites they only sold to local farmers at a low price (VND 5000 /kg). From 2014 to 2015, when the farmer groups began marketing floating rice including via the local media, the price rose to between VND 12,000 to VND 15,000/kg.

In 2015, a major challenge experience by floating rice farmers was that the Mekong River's flood was very small leading to much of the floating rice paddies destroyed by rats. RCRD conducted interviews with the farmers in August 2016 to evaluate how floating rice farmers could adapt to and cope with droughts. Whilst the drought severely affected floating rice production, it was found that having the diversity of growing vegetables in the dry season resulted in a resilient farming system so that farmers could recover from the shock of income loss following the serious drought. Most farmers interviewed said they would continue to grow floating rice because they needed the straw for dry season crops. They also noted that their income had improved since 2014 due to the significant rise in floating rice sale price.

The research process helped farmers – and the other stakeholders – to appreciate the value of floating rice for safe food production, maintaining biodiversity, recovering inland fisheries, improving the environment, and maintaining good soil quality and other necessary resources (straws) for upland crop production. According to interviews with floating rice farmers, the co-designed and implemented research made them feel more connected and more trust towards the government, researchers and business.

Organic rice production in Savannakhet Province, Laos

Savannakhet province is the most important province for rice production in Laos. In recent decades, intensity of agrochemical use has risen for dry season rice, and to a lesser extent, wet season rice.

Recent Government of Laos (GoL) policy, however, has encouraged "Good Agricultural Practices" (GAP) for rice production that are aligned with organic agricultural practices. Our project was located in Phonethan and Dong Yang villages in Xayboury district, Savannakhet Province. Both villages are mainly engaged in rice farming although many family members also seasonally migrate to work in Thailand. Fishing and livestock raising are also important secondary occupations. Both villages are located nearby to the Xe Bang Fai River. Since 2010, the flood regime of the river has been altered by the operation of the Nam Theun 2 (NT2) dam impacting water levels, rice production, fisheries, riverbank gardens and wetlands (Baird et al, 2015). Some of these impacts have been experienced in Phonethan and Dong Yang villages, but this has been a sensitive issue and can be difficult for the community to raise with the GoL.

In January 2015, our research team undertook a series of individual interviews with the stakeholders identified in Table 1, and from these interviews it became apparent that improving agriculture was the key concern. Subsequently at a workshop organized in March 2015, it was proposed by farmers to undertake organic rice production with a goal of increasing income. The research team and DAFO offered technical support based on GAP principles. In May 2015, a meeting was organized between 15 farmers from Phonthan village and 9 farmers from Dong Yang village, and the researchers and DAFO to detail the strategy for organic rice production.

Montage of the wetland survey in Nong Kae Sub-district, Thailand, June 2015 (Credit: Phongtep Bungkla)

The farmers believed organic rice production would be low cost, offer higher market prices, be safer for the environment, produce healthier final products, and was aligned with the governments new policies to promote rice export. They also said that they had experience on organic production in the past, as this was how they used to grow rice.

It was agreed that each family would plant one rai of organic rice, which ranged between 10 percent and 30 percent of their total land area. Our research team and DAFO provided training on the principles of GAP and how to produce organic manure and bio-extract. The researchers and DAFO team also visited several times over the duration of the season to provide technical advice. With a satisfactory yield during the first wet-season of production, organic production continued over three further wet and dry seasons, and the number of participating farmers also grew, together with the area under production.

Farmers and DAFO both stated the project had enabled a closer collaboration through the knowledge coproduction approach, whereby new farming techniques were combined with local knowledge and existing practices and values. In the process, other issues could also be broached, such as the impact of the large dam upstream on farmers' livelihoods.

Researcher visit to a farmer's organic rice plot in Phonthan Village, July 2015 (Credit: NAFC)

Documenting the ecological values of floating rice during the peak flood period (Credit: Nguyen Van Kien)

Conclusion

Agroecological farming has long been practiced in the Mekong region's productive and biodiverse wetlands. A contemporary challenge faced both by policy and on-the-ground practices is how to support wetlands and associated agroecological farming practices as an important foundation for regional resilience. Our research has explored a "knowledge co-production" methodology in three case studies in Thailand, Vietnam and Laos. We have collaborated with stakeholders to co-design and undertake research projects that meet their shared goals, and ultimately to produce usable knowledge towards real-world problems. A key feature of the research method is to combine a range of types of knowledge, including scientific and local knowledge.

To catalyze knowledge coproduction, one key role of the researcher is to create "arenas of knowledge coproduction", and convene boundary partners together around shared challenges (van Kerkhoff and Lebel, 2006). Such arenas do not emerge spontaneously, but must be designed within the opportunities and constraints of existing power relations and historical conflict associated with the particular case. We find that within limits knowledge coproduction can contribute towards conflict resolution, through building trust, expanding networks and constructively deepening collaboration between stakeholders, whilst also encouraging each actor to broaden their understanding of the problem from others' point-of-view. However, entrenched conflicts, such as wetland zoning at Rasi Salai dam, also reveal the limits of this approach.

Recommendations

Overarching

- Promote co-production of knowledge methods as a meaningful way to integrate social and physical science research with other forms of knowledge to meet sustainability challenges
- Widen the range of case studies to explore under what conditions knowledge coproduction can contribute towards conflict resolution
- Build capacity for knowledge coproduction amongst researchers in Southeast Asia and with stakeholders with whom they collaborate

Thailand

- Continue to develop and support wetland educational tourism, in particular for students and tourists, as it is committed to and perceived as useful by all stakeholders
- Wetland zoning is an urgent issue that requires further work. Since the dam and human activities have dramatically degraded wetlands, wetland zoning is needed to better manage each area through participatory means.
- Enhance the capacity of all stakeholders on how to manage wetlands sustainably through co-design and participatory action research

Vietnam

- Research on floating rice should be conducted to test its adaptive capacity to different levels of floods, given the risk of drought years
- Explore how to integrate other crops or fish with floating-rice based farming practices
- Explore non-farm based incomes, such as agro-ecotourism to improve floating rice farmers' income
- Consider seeking organic certification for floating rice

Laos

- Expand the experience of organic rice production promoted through knowledge coproduction methodologies to other nearby villages
- Explore how to certify the GAP rice to be organic, and develop a brand for improved marketing
- Continue to strengthen farmer capacity for soil improvement and inter cropping
- Consider the gendered dimensions of farming in the villages, and increase inclusiveness through diversifying organic production to other crops (vegetables and mushrooms) and animal raising

Project partnership

This research was undertaken jointly by:

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Knowlegde Products

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References

ADB [Asian Development Bank]. (2012) "Rivers and Wetlands" (pp 85-112) in Greater Mekong Subregion Atlas of the Environment (Second Edition) ADB: Manila.

Baird, I.G., Shoemaker, B. and Manorom, K. (2015). "The People and their River, the World Bank and its Dam: Revisiting the Xe Bang Fai River in Laos." Development and Change. 46(5): 1080-1105.

Frantzeskaki, N. and Kabisch, N. (2016) "Designing a knowledge co-production operating space for urban environmental governance—Lessons from Rotterdam, Netherlands and Berlin, Germany" Environmental Science & Policy 62:90–98.

Hughes, A.C. (2017). "Understanding the drivers of Southeast Asian biodiversity loss." Ecosphere 8(1). doi:10.1002/ecs2.1624

Käkönen, M. (2008). "Mekong Delta at the Crossroads: More Control or Adaptation?" Ambio 37 (3):205-212

Nguyen, K. V., Vo, V. O. and Huynh, D. N. (2015). "Comparing the costs and benefits of floating rice-based and intensive rice-based farming systems in the Mekong Delta." Asian Journal of Agriculture and Rural Development 5(9): 202-217.

Nguyen, V.K. and Pittock, J. (2016) Floating Rice in Vietnam, Cambodia and Myanmar. Australian National University: Canberra.

Schuttenberg H. Z., and H. K. Guth. 2015. Seeking our shared wisdom: a framework for understanding knowledge coproduction and coproductive capacities. Ecology and Society 20(1): 15. http://dx.doi.org/10.5751/ES-07038-200115

Smajgl, A and Ward, J. (2013) "A framework to bridge science and policy in complex decision making arenas" Futures 52: 52-58

van Kerkhoff, L.E. and Lebel, L. (2006). "Linking Knowledge and Action for Sustainable Development." Annual Review of Environment and Resources. 31(1): 445-477.