

TRANSFORMATIVE PARTICIPATION FOR SOCIO-ECOLOGICAL SUSTAINABILITY

Around the CoOPLAGE pathways

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Influence at the margin: Participation and water infrastructure in the Cambodian Mekong delta

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This contribution reflects on an on-going participatory research process initiated six years ago in Cambodia. Taking as a starting point the duality of the literature on participation in development—as emancipatory or yet another expression of technocratic power, we explore the scope that serious games offer to understand and influence the way water infrastructure projects supporting agricultural intensification in the Cambodian Mekong delta are designed and implemented. We stress that recognising, rather than brushing aside, the fact that serious games constrain participants in different—and sometimes unexpected—ways, allows being more realistic about their effects, which we argue amount to a significant influence at the margin.

►► A bridge between two parallel takes on participation, research and development

In the so-called Global South, participatory research approaches raise specific issues in relation to the ways *participation* and *development* have become entangled over time. Broadly speaking, the literature on the topic can be divided into “two camps” that seldom talk to each other—on the ground that they would deal with different processes and realities. On one side, critics who point to the failure of participatory approaches writ-large to live up to their emancipatory ideal and to the fact that they have become, at best, yet another depoliticising instrument in the toolbox of development agencies and, at worse, a way to deepen existing power relationships (e.g. Cooke and Kothari, 2001). On the other side, participatory research scholars, some of which focusing on participatory modelling (that can include the use of serious games or not; e.g. Voinov and Bousquet, 2010). These argue that such approaches stand in stark contrast to other more “mainstream” participatory approaches due to the fact that (1) the design of the approach itself is participatory and the (2) tools developed introduce some “distance” with the real world, which in turn acts as a buffer to limit the expression of power relationships, or at least allows unravelling them in dispassionate ways.

As a consequence, the broader critique of participation in development would not have any hold on these processes.

Establishing a dialogue between these schools of thoughts and epistemic communities, we argue, constitute a productive avenue. Their insights, when used in conjunction, can help understand what is at play in specific participatory research initiatives. The critique of participation reminds us that, in development contexts, participation (participatory research included) is generally engineered “from the outside” by development workers, researchers, or policy-makers and takes place in “invited spaces” where natural resources users are invited to contribute, but within the boundaries set by others (Cornwall, 2004). But being cognizant of these boundaries does not mean they are impermeable or that they cannot be redrawn. On the contrary, it helps identifying specific windows of opportunity (Daré and Venot, 2018) to design and implement participatory modelling processes that indeed allow exploring alternatives and can lay the basis for transformations that will do other things than just reinforcing dominant modes of knowledge and practices—and the vested interests underpinning these.

►► The context: the Cambodian Mekong delta and water infrastructure projects

The Cambodian Mekong delta stands in stark contrast with its iconic neighbour in Vietnam, well known for its extended network of dikes and canals that shapes a landscape home to millions of people and intensive agricultural practices. The area remains flooded four to six months every year, supporting small scale capture fisheries and, when the flood recedes, a mosaic landscape made of a multitude of geometric fields where farmers cultivate a variety of crops (fruit trees, vegetables, rice) slowly emerges.

The area is crisscrossed by hundreds of drainage canals that also provide irrigation water for cultivation in the summer. Some of these, dating back to the early 19th century, are called “*preks*” and result from joint (1) man-made interventions in the form of breaches in the levees of the main rivers, and (2) hydrological dynamics as floods further widened the breaches and sediments deposited progressively, raising adjacent land, hence forming the long canals and landscape that can be observed today (figure 15.1). Over the last two decades, the *preks* have been seen as a means to intensify agricultural production. The Cambodian government, with support from several aid agencies, invested in their re-excavation (they had become silted-up) and in the construction of water control infrastructures (mainly sluice gates) to increase water availability in the dry season (Venot and Jensen, 2021).

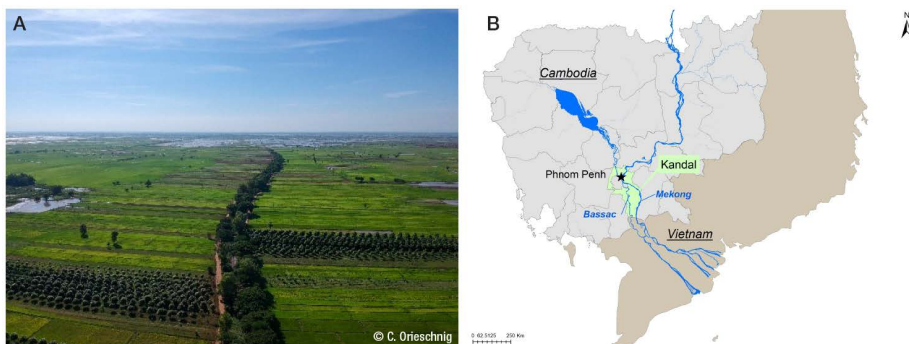


Figure 15.1. The Cambodian Mekong delta and the *prek* landscape

► Articulating participatory research and development projects

The initiative we reflect upon was “engineered from the outside” by foreign researchers who successfully submitted a project proposal to a European research call. The project, called DoUbT, involved a Cambodian University (the Royal University of Agriculture) and a Cambodian NGO (the Irrigation Service Centre) with whom foreign researchers had engaged with previously. It proposed to study knowledges and practices of land and water management in south-East Asian deltas, including in the Cambodian Mekong delta. One of the reasons to chose this area was that it had been less intensively studied than its Vietnamese counterpart and held the promises of generating new (academic) knowledge. Due to the interest of some members of the foreign research team, the project proposed to experiment with Companion Modelling (Etienne, 2014) and serious games as a way to generate hybrid (academic/non-academic) knowledge relating to delta management. The idea was also to train Cambodian researchers and civil society actors in the development and use of participatory modelling approaches that they could then use in other activities if they deemed these relevant.

Between 2016 and 2022, seven multi-stakeholder workshops that constituted “invited spaces” of participation were organised by the project team. These workshops brought together a diversity of actors: farmers, fishermen, village authorities, local elected officials, representatives of the decentralised government and of sectoral ministries at different levels of responsibility, as well researchers and staff from development agencies (table 15.1).

Table 15.1. The participatory process unfolded over six years and is still on-going

Date	Type of activity	Design team	Participants
April 2015	First encounter with the <i>preks</i> during study of AFD investment in the Cambodian Irrigation Sector		
March 2016	DoUbT project starts		
September 2016	J-P. Venot based in Cambodia, in RUA		
February 2018	CIRAD exploratory visit to Cambodia		
June 2018	DoUbT Meeting IRD/CIRAD/RUA/ISC		
November 2018	Design and implementation of the first serious game	IRD, CIRAD, RUA, ISC	Participants day 1: farmers, fishermen, village chiefs Participants day 2: commune elected representatives, districts officials, ministries and development agencies staff, and researchers

Date	Type of activity	Design team	Participants
May 2019	Design and implementation of the second serious game named: <i>Dai Prek</i>	IRD, CIRAD, RUA, ISC	Participants day 1: farmers, fishermen, village chiefs Participants day 2: commune elected representatives, districts officials, ministries and development agencies staff, and researchers
September 2019	Design and implementation of a game to build the capacity of water user group in Pursat province	ISC	Participants (three days): farmers, fishermen, village chiefs and commune elected officials
November 2019	Design of a game to discuss collective action for safe agricultural production in the <i>preks</i>	IRD, CIRAD, RUA, ISC	Not implemented
December 2019	COSTEA project starts and DoUbT project finishes		
February 2020	Design and implementation of <i>Dai Prek</i>	IRD	Participants (one day): MoWRAM staff and WAT4CAM experts
June 2020	Design and implementation of a game in four <i>preks</i>	ISC	Participants (three days): farmers, fishermen, village chiefs and commune elected officials
August 2020	Design and implementation of <i>Dai Prek</i>	IRD, RUA, ISC and WAT4CAM experts	Participants (two days): farmers, fishermen, village chiefs, commune elected officials and district officials (from two different areas)
May 2022	Implementation of <i>Dai Prek</i>	IRD, ISC and WAT4CAM experts	Participants (one day): Representative of sectoral ministries and district administration, and WAT4CAM experts
July 2022	Implementation of <i>Dai Prek</i>	IRD, ISC and WAT4CAM experts	Participants (three days): Elected Representatives at commune level

AFD, Agence Française de Développement – French Development Agency; COSTEA, COmité Scientifique et Technique de l’Eau Agricole – Scientific and Technical Committee for Agricultural Water; DoUbT, Deltas’ Dealings with Uncertainty project; ISC, Irrigation Service Center (Non-governmental organisation, Cambodia); MoWRAM, Ministry of Water Resources and Meteorology, Cambodia; RUA, Royal University of Agriculture, Cambodia; WAT4CAM, Water Resources Management & Agricultural Transition for Cambodia Project

To understand how the participatory process unfolded and with what effects, it is necessary to take a step back. Rather classically, research started by an exploration of the Cambodian Mekong delta. This included “field visits” along the *preks* as well as

open-ended discussions with a diversity of people. Through these, researchers came to the realisation that water control infrastructures were being built in the floodplain. Indeed, at the same time than the research was conducted, a multi-million agricultural development project was implemented by the Ministry of Water Resources and Meteorology (MoWRAM) of the Royal Government of Cambodia. The project was financed through a loan of the French Agency of Development (AFD) and French (mostly engineering) experts supported their Cambodian counterparts (for more information, see Venot and Jensen, 2021).

Construction of water control infrastructures took place even though development agents and engineers had little knowledge of the extremely complex local hydrology (which was reduced to a single indicator: daily water levels of the main river). Embracing an international policy model and the Cambodian national policy of Participatory Irrigation Management and Development (PIMD), the agricultural development project aimed at enhancing the participation of farmers in the management of the rehabilitated infrastructures. Yet, the approach followed remained largely technocratic as observed in many irrigation projects that have been implemented in Cambodia and beyond over the last three decades (Fontenelle, 2020; Ivars and Venot, 2018). In practice, farmers were invited to meetings during which development agents presented decisions they had already taken on the basis of desk work and short field visits and explained the responsibilities farmers should assume once the construction works will be over. Farmers had little say on a project implemented in their name and that impacted their life and, here, the critics of participation in development have a point! This had detrimental effects, even if considered from a narrow vantage point, as some of the water infrastructures collapsed right after their construction under the effect of rather average floods.

This diagnostic determined the overall orientation of the participatory research process. Investments in water control infrastructures were likely to continue as AFD and the Royal Government of Cambodia negotiated a follow-up project; foreign researchers together with their Cambodian academic and civil society partners hence considered that it was important (1) for a diversity of people to express their views about the present and future of the *preks* and (2) to identify alternatives to the current development pathway predicted on further water control and agricultural intensification—this in line with international academic debate relating to deltas socioenvironmental vulnerability. This decision was taken in the absence of any explicit demand to do so from people living along the *preks* (though they expressed concerns about past development interventions), let alone from people involved in designing and building water infrastructures. We, the authors, set the stage and we hoped some of the knowledge generated would “seep into” the development project being negotiated.

In line with these two objectives, we developed serious games that aimed at unravelling local knowledge about the *preks* as well as inhabitants’ concerns and priorities. But maybe more importantly, by using the games with institutional actors, we also aimed at questioning the idea that building water infrastructures and intensifying agriculture in the floodplains of the Cambodian Mekong delta was the “obvious” (and only) approach to follow. By confronting development agents and engineers, first-hand, with tools that they tend to frown upon and dismiss often on the ground that they are not “scientific enough”, we also hoped that they start considering these as legitimate knowledge-making approaches. The idea was that recognising the relevance

of the approach would, in turn, legitimise the outcomes of the sessions organised with local stakeholders and make it more likely for these to be accounted for in future development projects.

Engaging actors who were a priori unconvinced about the interest of our approach required a lot of “discussions behind the scene” and creating “interessement” (Akrich *et al.*, 1988a). Identifying individuals who were keen to experiment (whether this was because they were curious, had used similar approaches in other contexts, or just wanted to break from their routine) proved crucial. These individuals, then, acted as “spoke-persons” (Akrich *et al.*, 1988b) or “brokers” (Lewis and Mosse, 2006), helping us identifying or creating windows of opportunity for research approaches or results to be injected in the activities planned or implemented under the agricultural development project.

► Serious games do constrain...

By now it must have become clear that the participatory research process was neither neutral nor, some could say, very participatory given that the objectives and approach used to achieve these were defined by researchers, at least for a large part. This constituted a real boundary (in the sense of limitation) to participation; and other boundaries were also inscribed in different ways in the tools we designed (Venot *et al.*, 2022). These tools evolved over time and they also differed depending on who participated to the workshops (whether farmers and local officials or actors involved in the design or construction of water infrastructure). Broadly speaking, however, they all served as artefacts through which it was possible to describe agricultural and water management practice and discuss the expected impacts of a series of interventions (from the construction of sluice gates and roads to the organisation of farmers’ training or the support of small-scale capture fisheries) on agricultural production, the environment, and ultimately local livelihoods, in a context of variable and uncertain water availability.

Participants assumed the role of farmers, local officials, or agents of sectoral ministries. They had to choose from a series of options materialised by vignettes and place these on a board that represented the *prek* landscape, thanks to a series of plywood tiles that could be assembled in any possible way either to show a familiar or a totally imagined place (figure 15.2) so as to indicate where they thought specific interventions ought to be implemented. Hydrological conditions were simulated thanks to a dice-roll and the impact of each intervention (on agricultural production, the environment, and livelihoods) shown through a pre-defined, yet explicit, calibration. Running the game several times in a row or in parallel sessions allowed the emergence and discussion of different scenarios that materialised many possible developments.

This short description (for more see Venot *et al.*, 2022) hints as yet another series of potential obstacles to the expression of participants’ concerns. After all, we predefined the elements of the *prek* landscape that were represented (canals, roads, agricultural fields); its evolution was envisioned through the prism of (pre-identified) interventions that related to water and agriculture (not health, education, or rural infrastructures such as road and electricity—though these are likely to be important concerns too); parameters considered (agricultural production, environmental conditions, livelihoods) were limited and loosely defined; and impacts on these parameters were pre-calibrated. All of this stemmed from the interests and knowledge of foreign researchers who initiated the research activities and the scope of on-going development projects they aimed to inform and influence.



Figure 15.2. A version of the serious game used with local stakeholders in June 2020

Yet, these constraints did not really hold in the face of practice. One of the central tenets of Companion Modelling is that participants can modify the tools proposed—re-designing them in the process for future iterative use— and this is exactly what happened. Participants re-shuffled the tiles of the board as they deemed fit, they identified other types of intervention than those proposed, calculations were made with little regard to the calibration (and sometimes not made at all), and participants interacted with each other as they wanted, regardless of any instruction we may have tried to enforce. This is not mere tinkering; participants played an active role in re-shaping the serious games.

►► ... But they also influence at the margin

That serious games are oriented towards specific objectives (set by those who design them), and that they constrain participants accordingly, do not mean that they can only serve dominant powers. The participatory research process we initiated had transformative effects, at least at three levels.

First, engineers whose job is to design water control infrastructures, and who were at first reluctant (to say the least) to recognise that local farmers might have something to say about these, started recognising the value of local knowledge. This was illustrated, for instance, when one of these engineers multiplied one-to-one discussions asking participants clarifications about what they had done or said during game sessions and carefully noting down the information. Second, staff of the Cambodian NGO who had contributed to designing the game sessions fully reinvented these when they used the plywood tiles in activities they conducted to support the establishment of Water

User Associations in another province of Cambodia. This demonstrates the malleability of the tools used but also their ability to make sense of the approach in their own terms and transforming it in the process. Third, *preks* are now envisioned in a very different light than they had been in recent development projects. The studies that underpinned the participatory research process stressed the largely ad hoc nature of engineering interventions that treated *preks* as if they were independent, almost disjointed, water channels. The serious games, on the other hand, stressed their interconnected nature and articulated a vision of the *preks* as one among many elements of a mosaic landscape (represented by the plywood tiles in figure 15.2). This latter vision materialised in the sense that the development project that is now being implemented (and that we aimed at influencing) does not use single *preks* as its scale of intervention but, rather, what development agents call “*prek* development areas”, that is, groups of adjacent *preks* that are hydraulically connected. Further, the scope and duration of feasibility studies have been extended and (some) development agents seem keen to continue experimenting with “active” participatory approaches that go beyond mere consultations. Such changes remain fragile as they also go hand-in-hand with delaying infrastructure works to the dismay of other actors.

Our activities resulted in subtle yet tangible changes in terms of how participation of farmers is envisioned and the scale at which *prek* rehabilitation is planned. The overall doctrine—that development in the Cambodian Upper Mekong delta hinges on building water infrastructures and intensifying agriculture—has not changed however. This is understandable. After all, this is what engineers—who continue to steer most irrigation development projects—know and do. This is also a very visible way to demonstrate that “something is happening”, which is a prime concern of decision makers. The participatory research process fell short of one of its key ambition, to articulate strikingly different trajectories to the current development path. Rather, the effects we highlight are modest changes, which is why we talk of *influence at the margin*, yet they are important. The development projects that are underway provide an opportunity to see whether these modest changes can lay the basis for more significant transformations, and notably whether planning at the landscape level translates into practices that give more room to *prek* users and the environment.

►► Conclusion

It will not come as a surprise to most readers that participatory research, and more specifically participatory modelling, is not a “miracle solution”. We hope, however, to have shown that engaging with the critique of participation in development can be a useful way to reflect on participatory research.

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