

POLICY

Hard choices and soft outcomes?

Asia's mega-deltas are densely populated and face multiple stressors including upstream development and sea-level rise. Adapting to these challenges requires difficult choices between hard and soft responses set within a strongly political context.

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The low-lying delta areas of southern Asia's major river basins exemplify the pressures of multiple, rapidly growing drivers of change acting on large, often highly vulnerable, populations. Management and planning in such complex situations involves difficult choices that are strongly politically influenced and can produce unequal outcomes for people's well-being. Management options are often characterized as hard (such as those including infrastructure and sea defences) and soft (for example, options that take into account land use and planning). Writing in *Nature Climate Change*, Alex Smajgl *et al.*¹ evaluate a range of management options for the Mekong Delta in Vietnam, in response to a massive programme of upstream development and its impacts on downstream river and sediment flows, and the effects of increases in salinity due to rising sea levels. Smajgl *et al.* argue that a mix of hard and soft responses is economically and socially most beneficial but that options are politically contested and have important budgetary implications for key government ministries.

Many studies of environmental change distinguish between the vulnerability of physical and social systems (what and who is vulnerable and why), often addressing one perspective more than the other. In contrast, Smajgl and colleagues¹ consider both in the political context that underpins decision-making. Political concerns will always be critical to understanding decisions, particularly in situations where the stakes are high, as in the Mekong Delta, where hard options involve major investments and impose land-use requirements on hundreds of thousands of farmers.

Vietnam's Mekong Delta supports agriculture-based livelihoods for 282,000 households and generates a significant share of Vietnam's international rice production, which amounts to 19% of the global rice trade. Smajgl *et al.*¹ simulate the effects of upstream dam construction and irrigation expansion in Cambodia, China and Lao People's Democratic Republic, and the salinity reduction effects of sea dykes to

protect against a sea-level rise of 30 cm by 2050. They propose two scenarios, both include all the drivers of change, but one with hard options (upgrading sea dykes and building new sluice gates) and the other without (offsetting higher salinity through land-use options). A central concern is that the hard and soft options are associated with different costs, livelihood systems and opportunities to improve household incomes. Hard responses also bring long-term lock-in as they are often irreversible — a key factor in adaptation decision-making². The options have different outcomes in terms of optimal agricultural system response: much less land-use change is required with the hard-option scenario but greater land-use change in the soft scenario requires a shift from rice production to more profitable (but in some cases risky) activities. This creates a tension with government policy that prioritizes rice for national food security and export. The situation is further complicated by the

existence of competing development plans, some government-led and others supported through international development donors, that advocate different combinations of hard and soft options.

There have been calls for greater recognition of political processes in climate adaptation^{3,4} and empirical research shows how the politics can lead to unequal and sometimes contradictory outcomes for intended beneficiaries^{5,6}. Yet the political context is highly sensitive and can be difficult to research. In the Mekong Delta, the situation is made more difficult by the number of countries involved in upstream development and water management, with upstream countries making unilateral uncoordinated decisions while also being protective of information and decision processes. The political dimension is likely to extend far beyond the delta. The way that international adaptation funds targeted at major infrastructure projects are managed needs to ensure that decision-making



The Mekong Delta in Vietnam.

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processes are transparent and prioritize equitable outcomes⁷.

Smajgl *et al.*¹ use extensive survey data to develop a decision-making model of household behaviour across three provinces in the delta. This allows exploration of the effects of high-level decisions on farming livelihoods, their vulnerability and barriers to adaptation. Based on this research, the authors argue that a mix of hard and soft options, combined with a strategy to coordinate dam operations to minimize the low flows that exacerbate saline water intrusion, gives the best outcome for livelihoods and risk reduction. Although Smajgl *et al.* incorporate multiple drivers of change in their analysis, they do not

consider the potentially significant effects of upstream changes in climate on river flows or changes in the magnitude and frequency of coastal extreme events and their impacts on saline intrusion and inundation. Quantifying the uncertainties and capturing their effects on the recommended outcomes is also a major challenge when evaluating these complex major investment decisions. Whereas evolving approaches for decision-making⁸ should provide useful frameworks for the sorts of decisions facing the Mekong and other deltas, it is crucial that such methods also recognize the political contexts of decision-making and the potential consequences these decisions have in

the long-term for the livelihoods and well-being of the people most affected. □

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