

To: Decision Maker
From: ANONYMIZED
Re: Lessons learned from messy problems

I applaud you for considering commissioning an integrated assessment to address your messy environmental problem. When done correctly (simultaneously integrating Interdisciplinarity, iterativity, interactions with multiple stakeholders, and usable science), an integrated assessment can be an effective tool for informed decision making. It is necessary, however, to know upfront the difficulties regarding this process; it is not the principle of integrated assessment that is the often problem but rather the practice. It is my hope that you can learn from past integrated assessments and their benefits and shortcomings when evaluated in terms of adequacy, value, legitimacy, and effectiveness before you begin to tackle your wicked environmental problem.

Adequacy

To meet the criteria of adequacy, the information generated by an integrated assessment must be perceived as credible, valid and accurate. This is often difficult since a multi-disciplinary study inevitably results in the politicization of science and the scientization of policy. The case of solving hypoxia in the Gulf of Mexico provides a good example of adequate scientific knowledge being perceived as inadequate. This was largely a result of Sarrewitz's Five Myths of Science; since many stakeholders viewed science in terms of these myths (especially as inherently authoritative), they interpreted small uncertainties (i.e., the possibility that phosphorus may contribute to hypoxia) as a lack of credible information. This led to industry and some government officials insisting that better data was necessary before measures could be taken to reduce nitrogen inputs in agriculture. It is imperative to understand that many stakeholders view science in terms of these myths and that decisions can and must be made in the face of some degree of uncertainty.

Value

In order to be salient, an integrated assessment must be perceived as having relevant knowledge that can be applied to policies over different time and space scales. This was particularly relevant in the Global Warming case study. By commissioning RISAs that produced outputs in both science and policy, these boundary organizations attempted to produce science that falls in Pasteur's Quadrant (which is use-inspired basic research). While the information generated for different regions from these RISAs may be relevant for policy decisions, this case shows that even salient predictions, forecasts and scenarios generated from valuable information may not be translated into implementation. Since many governments across all scales are more reactive than proactive, decision makers will often not do enough (or nothing at all) when the outcome is uncertain. This can be disastrous when Scheffer's ecological complexities are involved; since inaction risks a system collapse that cannot be reversed, some decisions must be made even in the face of uncertainty.

Legitimacy

Since one of the criteria of an integrated assessment is involving multiple stakeholders, it is crucial that the process be perceived as fair and considering all viewpoints. The Cod Fishery case is an example where the integrated assessment is seen as being illegitimate. While all groups in the governance triangle (state, community, and market) are involved in the Fisheries Resource Conservation Council (FRCC), the FRCC is essentially a consultative process. It is clear that the government consults other parties but is essentially makes decisions independent of these groups that are biased in favor of the fishing industry. In order to be more effective, the integrated assessment needs to integrate more cross-sector partnerships (public-private partnerships, co-governance, and social-private partnerships).

Effectiveness

This may be the most important criteria for the effectiveness of an integrated assessment; does it make a difference in solving a wicked problem? The case studies have shown that in terms of progressive change, integrated assessments only produce marginal victories. In a best-case scenario, integrated assessments can change the nature of the debate. This is best seen in the Cod fisheries case, where managers are moving away from a single species, “people in boats and fish in water” management style to an ecosystem-based management approach. Conversely, the hypoxia and global warming cases show that integrated assessments sometimes only stall or stabilize the debate. Since decision makers are waiting for 100% certainty of scientific information, it is unlikely that there will be significant action regarding hypoxia in the upcoming Farm Bill or considerable government action to avert climate change in the near future.

It is crucial that you understand both the benefits and downsides of integrated assessment before you being to address your own wicked problem. An assessment that is multi-disciplinary and involves many stakeholders from a range of sectors is important for informed decision making but will inevitably cause conflict at many stages in the process. It is my hope that you can learn from the strengths and weaknesses of past cases so that you can produce an integrated assessment that is adequate, valuable, legitimate, and effective.