

Combining Indicators for Policy Implementation? Let Form Follow Function

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The theme session description sets the scope for this talk. We are working in conditions where objectives have been adopted by a competent management body, and the nature of the benchmarks for any indicators has been specified. Moreover, there should be objectives and benchmarks that cover environmental, economic, and social aspects of the ocean, and collectively they are expected to be both sustainable and achievable. We have reached the point where the focus on implementation of the policy and management framework, not developing or fine-tuning it. In this context, indicators have two major roles

- 1) To measure progress towards the objectives, individually and collectively
- 2) Inform the choice of pathways to pursue the objectives, when different options for pathways will have different distributions of costs and benefits.

Neither is a simple task. Measuring progress is not one-dimensional, unless there is only one objective for the entire system. In a policy world that has endorsed the ecosystem approach, that should never be the case. Consequently a single indicator will not be adequate even to measure progress towards objectives. However informing wise choices among alternative pathways is an even greater challenge for indicators, so we will work from there.

The suite of social, economic, and ecological objectives that have been adopted can be viewed as a multidimensional landscape. Target reference points may be viewed as the mountains on that landscape – one strives to climb well up on them, and remain at least above the tragetted “tree-line” although no necessarily at the pristine peak. Limit reference points are precipices – the tipping points on the edges of the plains and if strayed over the system may fall rapidly into the canyons. There are as many canyons as there are mountains, although the slopes of both may vary form objective to objective. For indicators to be of value they have to inform the choice of viable pathways from the present to a future closer to the full suite of objectives, or paths that maintain the current position of the socio-ecological system represented by the indicators, if the system is near the benchmarks for achieving the suiet of adopted objectives.

What comprises good management choices? There are serveral considerations.

1. Above all, good policy and management avoids sitting on the edge of tipping points into the abysses associated with collapsed stocks, damaged ecosystem functions, bankrupt ocean industries, and coastl communities suffering from large scale unemployment. IN systems which are being used may many industries, or even a few fully developed industries, the aggregate pressures are likely to already stressing at least some ecosystem components – if industries have been greatly scaled back for precautionary reasons economic and or social aspects of the human part of the system are probably under stress. Because stressed systems may already be moving towards relevant tipping points, the first properties indicators have to have is power in measuring the distance the system currently is from all of them. IN addition,

the indicators have to be sensitive to the rate at which moving along various pathways available results in moving towards or away from the tipping points associated with the indicators.

2. Useful indicators also have a high likelihood of informing decision makers when opportunities open for closing the gap between present state and the target benchmarks. In a variable world, opportunities for progress are not uniformly available in time (and space). Oceanographic variability is a familiar example of this – occasional favourable conditions for recruitment present windows of opportunity for real choice on how to improve sustainability *and* profitability of fisheries, conditions likely associated with particularly poor recruitment may mean deferring plans for expansion of social or economic benefits and increasing the risk aversion of avoiding the tipping points. Opportunities for progress are also uneven for social and economic objectives, as markets and operating costs vary for many reasons, some unlikely to be foreseen in medium-term planning. Consequently indicator reporting has to communicate for the landscapes of “present conditions” and “mountains and abysses” where the discrepancies (areas where improvement is needed most) are largest *and* inform the decision makers when windows of opportunity or needs for greater caution occur. This knowledge is essential to make good choices on many time scales, but particularly for adaptive management.

3. There are situations where policy-mandated needs for improving socio-economic performance occur (mandated recovery plans, prohibited bycatches etc). Here again, these mandated improvements are likely to come at costs of reduced status, or at least slower gain, towards other objectives. In these cases, any useful reporting system for indicators will show where the costs will be distributed in slower climbing towards the other objectives, or edging closer to other tipping points, as the mandated progress up the selected mountains proceeds.

4. And of course, indicators should inform the decision-makers of the locations and magnitudes of trade-offs in general, as various pathways ahead are chosen. If the indicators for objective X is declining and nothing is done, how quickly will the risk of real harm increase? If the indicator for X is declining and we impose costs on other parts of the socio-economic system, how will those scale as we increase our efforts to address the objective where ground is being lost.

Governance is faced with all of these challenges in every significant decision. If we are going to use indicator based reporting, the reporting system has to have enough richness for all four of these tasks. That means the collective presentation of indicators tells us the shape of the landscape that must be traversed by the decisions, where present conditions match or mismatch the landscape of objectives, and what pathways exist for moving through the landscape, including which tipping points may be approached and which mountains are proving hard to climb.

These tasks won't be done with aggregate scores by rolling a number of indicators into an index. It won't be done with silly deterministic rules like one-out, all-out. The reporting system has to contain the map and communicate the terrain. This is not as hard as it sounds. We all learned to read topographic maps in elementary school, and navigate with a compass in Scouts or Guides. We need our present experts on indicators to go back to this knowledge from our youths, and applying it to the task of indicator reporting. Only then will the form of indicator reporting follow the function. .