USE OF INDICATORS IN ENVIRONMENTAL DECISION-MAKING

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ABSTRACT

More than 30 years since the initial legal directive and academic recommendations for using environmental indicators in policy-making and resource management decisions, and despite considerable investments of resources, a general understanding and broader dialogue on aggregation and dissemination of environmental information via indicators remain lacking. The indicators original goal of promoting beneficial uses of the environment without degradation and its attainment through coordinated multi-agency programs, monitoring to evaluate their efficacy, improved research, and development of broadly compatible datasets has been realized in just a handful of cases. Indicators are viewed as examples of "usable science," and, as such, they should meet the criteria of being adequate, effective, valuable and legitimate. In addition to the sheer number of environmental indicators and no *a priori* understanding of their use within a broad societal framework, their utility has been minimized by incongruent and conflicting definitions, inter-changeable usage of different terms, and complex analytical schemes. Even the apparently successful and long-term efforts of reporting on the environment have been characterized as inadequate for attaining environmental management and restoration goals and lacking linkages between indicators and their utility in decision-making. There is also an apparent dichotomy in purposes of their development: statistical reporting of critical environmental parameters, and assessment of condition [implying human use]. However, these two aspects are not mutually exclusive, and should be viewed as complementary and necessary to gauge the status and recovery of coastal ecosystems. The driver-pressure-state-impact-response framework is a key strategy to incorporate the socio-economic aspects of environmental decision-making that is scientifically sound and transparent in approach. The paper provides examples of environmental indicators that are both amenable to current water quality monitoring programs and valuable for inferring progress of environmental management and restoration.

KEYWORDS
Indicators, statistical reporting, condition, decision-making