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Paradigm Shift in Computer-Aided Policy Support

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Abstract: Scientific policy aid, especially in environmental management facing complex choices involving divergent beliefs and interests/ values, has evolved into a number of distinct fields such as Decision Support Systems (DSS), Expert Systems (ES), Integrated Modelling and Assessment, Risk Analysis. While the approaches pursued by these systems are different, they are all focused on sustainable development and improvement of decision making involving intractable, elusive and ill-structured problems.

Computer-aided policy support is expected to explore multiple perspectives of the problem at hand; enhance decision makers' insight into the problems drivers and policy outcomes; and facilitate communication and knowledge transfer between the actors involved in or affected by the decision. In this context computer systems play a crucial role as catalysts of interdisciplinary research and promoters of scientific policy advice. Applied policy research, however, seems to be losing its appeal mainly due to the persistent lack of successful implementation. There are different reasons for which policy makers do not embrace scientific policy recommendation, including the systems' failure to address the changing context of the problems; system complexity; highly demanding user interfaces not geared to users' skills; the low transparency of the systems' operation ('black box' technology); cognitive obstacles, such as an aversion among senior executives to DSS technology; ignoring the broader organisational and institutional context.

In this paper we explore recent trends leading to a new generation of policy support systems [Beynon et al., 2002; Courtney, 2001; McCown, 2002a; McCown, 2002b; Rauscher, 1999; Shim et al., 2002] set to overcome these problems. Attention is paid to methodological pluralism favouring the simultaneous application of different methodologies which stimulate learning, question beliefs and surface tacit assumptions; comprehensive risk/uncertainty analysis and communication, accounting for all sources/types of uncertainty; deliberative methods pursuing pluralistic, inclusive approaches to decision making; participatory assessment [Renn, 2006; Stirling, 2003] and group model building [Vennix, 1999]

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