

# **INTEGRATED ASSESSMENT AND ENVIRONMENTAL MODELLING**

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It is clear that the modelling of environmental systems problems poses considerable difficulties. These systems are complex, distributed in space, dynamical (with time-spread responses to change), and heterogeneous. Often the problems are wicked ones whose formulation is not totally agreed upon by stakeholders and who may have different and changing preferences. Their models must cover a range of sciences (e.g. hydrology, ecology, agriculture, forestry, economics, psychology, even demography, sociology and politics) and a range of categories of people affected. The evolving discipline of Integrated Assessment (IA), which will be discussed briefly to provide context, aims to deal with such systems, including the human component. Integrated Scenario Modelling (ISM) is a core activity of many IA exercises. It involves a model as an approximation of the system under study. The model allows the simulation of how input drivers (scenarios) such as climate and human activities yield outputs (indicators) representing the states of the system. In IA, the system is extended so that policy and management link to the controllable human activity inputs. The talk will characterise the different types of integrated modelling frameworks that are available and illustrate their applicability for particular uses. It will take as an example the issue of how managers in river basins can prioritise their investments to meet resource condition and socioeconomic outcomes. It will also summarise the lessons that we have learnt.