

Appendix 2: The rationale underlying the questionnaire and the semi-structured interview

To ensure robust and credible results for this study, two kinds of triangulation were employed: 1) methodological triangulation and 2) data triangulation (Patton 2002: 247).

The methodological triangulation involves using both a standardized questionnaire, to which responses constitute ordered categories of opinion that can be weighted to generate numerical data suitable for a ranking analysis, and a semi-structured interview, which elicits more detailed and conceptual information on the same subject matter, suitable for qualitative analysis. Both analyses detect the level of shared opinion among the 20 “policy experts”, while also allowing comparisons to be made between the five policy sub-groups.

The ranking analysis of the questionnaire data allows the responses of the 20 “policy experts” to be triangulated using the responses of the 10 “academic experts” (who were not interviewed), by comparing between the two sets of responses.

The questionnaire

The questionnaire was sent to each expert for completion and return prior to the interview, both to stimulate thought on the topics of interest (five environmental policies and a range of policy attributes), and to avoid as far as possible introducing any bias or change of perception which might result from sending the questionnaire after the interview, given its deeper exploration of the issues.

Each (identical) questionnaire included an exercise, in the form of a table, for which each expert was asked to rank 27 policy attributes in terms of their relative importance in the formulation and implementation of effective environmental policies (Table A2). The aim was to see how much importance each expert attached to the 12 attributes characteristic of socioecosystem management (two of which were subdivided, giving 15 in all). The experts had no prior knowledge of the significance of these in the context of the study, and a further 12 attributes, not characteristic of socioecosystem management but addressing related aspects (and which are also employed in formulating environmental policy in Mexico), were added to the list to increase the range of options and reduce bias. It was stated that no “correct” answers exist, that it was valid to rank all attributes equally or to give mixed responses, and experts were invited to suggest additional attributes.

For the ranking analysis, each expert’s response, signalled with a cross in the box of their choice at the intersection of a row and a column, was assigned a numerical weight. Given that the table has six columns with hierarchically ordered categories of opinion, increasing in favourability from left to right with a “don’t know” option in the last column, responses were weighted, left to right, with: 0, 1, 2, 3, 4, and 0 (it was considered unhelpful to assign any other weighting to the “don’t know” option).

Table A2. Relative importance of policy attributes for effective policy outcomes

| | Potential policy attributes for the formulation and implementation of environmental public policy | Relative importance | | | | | |
|-----|---|---------------------|--------|------|------|---------|------------|
| | | None | Little | Some | Much | Crucial | Don't know |
| 1† | Ecosystem approach | | | | | | |
| 2 | Habitat approach | | | | | | |
| 3† | Drainage basin / sub-basin approach | | | | | | |
| 4 | Zoning based on environmental criteria | | | | | | |
| 5 | Prioritization based on socioeconomic criteria | | | | | | |
| 6 | Short-term duration (years) | | | | | | |
| 7 | Medium-term duration (government administrations) | | | | | | |
| 8† | Long-term duration (decades) | | | | | | |
| 9 | Technical involvement from a scientific discipline | | | | | | |
| 10† | Interdisciplinary technical involvement | | | | | | |
| 11 | Sectoral autonomy (limited, discretionary mainstreaming) | | | | | | |
| 12† | Environmental mainstreaming | | | | | | |
| 13 | Exclusively public funding | | | | | | |
| 14† | Public-private funding | | | | | | |
| 15 | Submit developed proposals to public consultation | | | | | | |
| 16 | Sporadic public participation | | | | | | |
| 17† | Continuous public participation | | | | | | |
| 18† | Environmental governance | | | | | | |
| 19† | Fluid communication between stakeholders | | | | | | |
| 20† | Governmental subsidiarity (decentralization) [§] | | | | | | |
| 21† | Coordination between the three tiers of government [§] | | | | | | |
| 22 | Indicators of regulatory and procedural compliance | | | | | | |
| 23† | Sustainability indicators | | | | | | |
| 24 | Clear, fixed targets | | | | | | |
| 25† | Adjustable targets (what is possible relative to what is desirable) [‡] | | | | | | |
| 26† | Results monitoring | | | | | | |
| 27† | Adjustments to management based on evaluation and monitoring [‡] | | | | | | |
| 28 | Other (specify) | | | | | | |
| 29 | Other (specify) | | | | | | |
| 30 | Other (specify) | | | | | | |

† = Attributes of socioecosystem management (these were not marked with an asterisk in the questionnaires sent to the experts).

§ = Component attributes of multi-scalar, polycentric environmental governance.

‡ = Component attributes of adaptive comanagement.

On receiving all the completed questionnaires, the responses were collected in seven tables identical to that included in the questionnaire, five aggregating the responses of the sub-groups of experts (one for each of the five policies), one aggregating the responses of all 20 policy experts, and one aggregating the responses of the 10 academic experts. For each of these, the number of coincident responses in any given box at the intersection of a row and a column was multiplied by the corresponding pre-assigned weighting, to give a score. The sum of the scores in each row, expressed as a numerical total, was then ranked from highest

to lowest to reveal how the expert groups collectively appraised the concepts expressed in the rows.

The semi-structured interview

Each interview contained the same set of 14 questions (with five additional prompt questions, if needed), and differed only in the name of the policy. The content and length of the responses were up to the interviewees, and most interviews lasted for about one hour (For the full list of interview questions see Appendix 3).

The first questions focussed on each interviewee's direct area of expertise, in terms of the policy for which she/he was responsible, and the factors that contribute to or obstruct its successful implementation. Subsequent questions invited opinions on other policies, and explored the interviewee's perceptions regarding specific policy attributes (without revealing that they are characteristic of socioecosystem management or what that is), and their role in the successful implementation of the policy.

This sequence of questioning laid the conceptual groundwork for introducing the socioecosystem concept at the end of the interview, including the reading of a brief working definition of a socioecosystem approach to environmental management, drawing on and integrating ideas from several sources (Gallopín 1994, 2001, Valentin and Spangenberg 2000, Gunderson and Holling 2002, Liberatore and Funtowicz 2003, Olsson *et al.* 2004, Haberl *et al.* 2006, Maass and Cotler 2007, Brondizio *et al.* 2009, Ostrom 2009, Domínguez 2010, Collins *et al.* 2011, Maass 2012). The interviewee's opinion was then elicited as to how the socioecosystem approach compares with their particular policy, and whether they perceived advantages or disadvantages in the socioecosystem approach as a basis for environmental policy.

Before concluding the interview, each expert was invited to share their suggestions as to how to improve Mexico's environmental policy.