

## CHALLENGES IN APPLYING CEA IN THE MEKONG RIVER BASIN

Cumulative effects concerns which can be identified in Mekong River Basin (MRB) riparian countries include:

- Long range transport of air pollutants
- Mobilization of persistent or bioaccumulating substances
- Climate change
- Habitat alienation and fragmentation
- Reduction in soil quantity and quality
- Reduction in groundwater supplies and groundwater quality
- Effects associated with agricultural and forestry chemicals
- Increased sediment, chemical and thermal loading of aquatic resources
- Accelerated rates of renewable resource harvesting
- Disposal of toxic wastes
- Loss of productive land due to infrastructure development.

Although these concerns demand management responses, application of cumulative effects assessment (CEA) faces a number of scientific and institutional barriers both in the MRB and around the world. Examples include environmental and ecosystem complexity, difficulties in measuring individual effects, lack of attention to defining appropriate spatial and temporal boundaries, and lack of sustained interest in monitoring and managing (or mitigating) cumulative effects.

Specific obstacles to effective CEA in the MRB could potentially result from:

- Lack of institutional policy and/or legislation requiring an examination of cumulative environmental effects
- Jurisdictional conflicts over division of power, roles, and responsibilities of various levels of government
- Lack of effective cooperation among various agencies and departments of governments



- The absence of clear and precise division of responsibilities among the project proponents and governments regarding the implementation of remedial measures
- A lack of accountability of governments regarding proper follow-up of results and recommendations contained in an environmental impact assessment (EIA) or CEA report.

### UNCERTAINTY

There will always be some degree of uncertainty associated with CEA. Uncertainty is often related to scientific methods and techniques, data availability and accuracy, new or

unproven technology, or an unfamiliar environmental setting.

Another major source of uncertainty when assessing the cumulative environmental effects of a project or activity relates to which future projects to consider in the CEA, and determining when those projects are scheduled to proceed. Plans may be revised, cancelled, or delayed for an indefinite period of time. Often, many projects receive government approval but never proceed to construction due to technical or economic barriers. In practical terms, the decision to include or exclude a future project from the CEA should be based on weight-of-evidence. In other words, are there strong indications that the project will proceed?

When the details of future projects are unknown or the information is unavailable, additional uncertainty is introduced about the environmental effects of those projects and how these effects will interact with those of the project or activity in question. In such situations, available information and best professional judgement should be used and in most cases, only qualitative assessments of cumulative impacts are possible.

Any uncertainty, whether it arises from information gaps, selected methods or technological unknowns should be explicitly stated in the CEA report.

## **GUIDELINES FOR CEA**

The development of effective criteria for identifying cumulative impacts is one of the principle ways to overcome some of the barriers to CEA. Criteria that are available for use to determine if a CEA study has been

properly conducted were developed in the United States by the Council on Environmental Quality (CEQ) Cumulative Effects Assessment Working Group and are considered standard practice for CEA. These criteria, as listed in Table 1, could also be applied as generic guidelines for planning and conducting CEA in the MRB.

## **SYNOPSIS**

Based upon this brief review of barriers to cumulative effects studies, the following observations and conclusions can be drawn:

- Due to the importance of incorporating cumulative effects considerations in balanced decisions relating to proposed projects, policies, plans, and/or programs (PPP), decision makers should give priority to the development of necessary guidelines and scientific information to facilitate CEA. The guidelines for a particular country should be in agreement with the EIA process; they should address 'triggers' for CEA studies, and how to plan, conduct, and document such studies. Planning aspects include guidance on principles for establishing spatial and temporal boundaries, identifying reasonably foreseeable future actions (RFFA), and determining the significance of cumulative effects.
- CEA practice to date has focused on the biophysical (including ecological) aspects of the environment. Additional attention needs to be given to cumulative effects on the socio-economic environment, including the development of both identification and prediction methods.

- Fundamental research is needed on environmental pathways, and thresholds and carrying capacities for resources, ecosystems, and human communities. Of particular importance is the need for information on carrying capacity and limits of acceptable change.
- In order to conduct CEA, it is necessary for the study planners and implementers to adopt a holistic perspective relative to the environment. Such holistic perspectives might be limited in traditional academic backgrounds, thus suggesting the need for integrated science training for practitioners in EIA and CEA. Further, the planning and implementation of CEA studies can be challenging from both technical and organizational perspectives. Accordingly, it is necessary for CEA practitioners to be creative in their consideration of methods and tools and to select those approaches which would be appropriate for the individual study requirements.
- There are numerous methods available for addressing direct, indirect, and cumulative effects of projects and of strategic plans. Lack of appropriate methods is often cited as an excuse for not doing CEA. Although this excuse is valid in some cases, it should not be considered as an excuse for all such studies. However, additional research is still needed on methods for assessing cumulative effects,

**Table 1** Criteria for the design and review of CEA studies

<ol style="list-style-type: none"> <li>1. The study area is large enough to allow the assessment of valued environmental components (VEC) that may be affected by the project or activity. This may result in an area that is considerably larger than the project's 'footprint.' Each VEC may have a different study area.</li> <li>2. Other actions that have occurred, exist, or may yet occur which may also affect those same VECs are identified. Future actions that are approved within the study area must be considered if they may affect those VECs and there is enough information about them to assess their effects. Some of these actions may be outside the study area if their influence extends for considerable distances and length of time.</li> <li>3. The incremental additive effects of the proposed project or activity on the VECs are assessed. If the nature of the effect's interaction is more complex (e.g., may be synergistic), then assess the effect on that basis, or explain why that is not reasonable or possible.</li> <li>4. The total effect of the proposed project and other actions on the VECs is assessed.</li> <li>5. These total effects are compared to thresholds or policies, if available, and the implications to the VECs are assessed.</li> <li>6. The analysis of these effects should use quantitative techniques, if available, based on best available data. This should be enhanced by qualitative discussion based on best professional judgment.</li> <li>7. Mitigation, monitoring and effects management should be recommended. These measures may be required at a regional scale (i.e., possibly with other stakeholders) to address broader concerns of effects on VECs.</li> <li>8. The significance of residual effects are clearly stated and defended.</li> </ol>
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especially as it relates to ecosystem analysis. Also, a typology of methods is required in relation to the identification and prediction of cumulative effects.

- An important issue for CEA is that of considering cumulative effects from the perspective of affected resources, ecosystems, and human communities. This perspective is in contrast to the 'proposed action' perspective used in the EIA process. Another topical issue relates to institutional coordination and funding mechanisms for cumulative effects mitigation measures and appropriate monitoring. A challenge faced by governments in dealing with cumulative effects is the need for reforms to existing institutional frameworks to enhance coordination among responsible agencies. Governments also need to allocate additional funding to these agencies to enable them to be effective.
- Because CEA is a newly evolving field, considerable additional capacity building will be needed in support of MRB riparian countries to allow them to adequately assess cumulative impacts of planned projects in the Basin. At present, MRB countries have a limited EIA capacity which makes assessment of cumulative impacts extremely challenging.