

## **CUMULATIVE EFFECTS AND FOLLOW-UP IN IMPACT ASSESSMENT**

Level: Intermediate/Advanced

Prerequisites for Participants: Foundation training on EIA (environmental impact assessment) or CEA (cumulative effects assessment) (professional-level short course or University-level specific course or program); and/or minimum of 2 years in professional experience in planning and conducting EIA or CEA for environmental impact studies. (Note: these prerequisites do not apply to student participants.)

Language of Delivery: English

Duration: 2 days

Name and Contact Details of Trainers:

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### **COURSE DESCRIPTION**

Summary: This intermediate/advanced level course has five purposes: (1) to summarize the state of professional practice regarding the conduct of the fundamental requirements of CEA within Environmental Impact Assessment (EIA) processes; (2) to plan the accomplishment of the fundamental requirements for an actual proposed project from a European country; (3) to illustrate the use of environmental sustainability considerations in determining the

significance of cumulative effects; (4) to discuss adaptive management (and monitoring) as follow-up activities in CEAs for large-scale proposals; and (5) to summarize policy choices and collaboration approaches for the development of local and regional cumulative effects management initiatives. The premise of this course is that CEA should be an integral part of, and not separate from, both in-country and international EIA processes. The fundamental requirements are focused on stepwise procedures associated with international best practice principles that guide the professional practice of EIA and CEA. These procedures and principles are addressed by identifying key valued ecosystem components (VECs), focusing on those for which CEA is appropriate; delineating spatial and temporal boundaries; describing historical baseline conditions and trends; establishing cause-effect linkages between past, present, and future actions and VECs; determining the significance of cumulative effects via the use of environmental sustainability principles; development of follow-up adaptive management programs based on six common elements; and development of project mitigation and regional management programs, as appropriate. Attention will be directed toward practical approaches for management of cumulative effects, including the use of emissions trading, collaborative planning, and appropriate institutional policies and programs. Practical processes for both preparing and reviewing CEA-related documents will be emphasized, along with presentations on case studies, and workshop sessions involving interactive groups. A central feature of the course will be group activities related to the development of a CEA plan for a proposed project from a European country. Interchange of information and experiences by the participants will be encouraged within all methods of presentation. The anticipated learning outcomes are related to achieving a better understanding of the principles and practices of CEA, and to effectively applying them in study planning and review.

Description of Course Structure and Content: The agenda features segments associated with the above five purposes. Specific topics within the segments include (specific time allocations will be incorporated in the final agenda):

### Day 1

- Principles, Definitions, and Stepwise Iterative Procedures for Conducting CEA
- Critical Importance of CEA and Challenges in Conducting CEA
- Interactive Workshop on CEA Case Studies Based on Participant Experiences (participants will be divided into groups and each group will be asked to identify one example of a project wherein they addressed CEA, or they need to)
- Scale Issues in CEA
- Identification and Analysis of Other Past, Present, and Future Actions
- Methods for Identifying Potential Cumulative Effects and Their Linkages (Connections) to Pertinent VECs

- Workshop I on Planning a CEA for an Actual Project in a European Country (the participants will be divided into groups and asked to develop a plan for identifying relevant boundaries and other actions to be addressed)

## Day 2

- Case Study on the Analysis of Environmental Sustainability (AES) in CEA
- Elements of Adaptive Management (Including Monitoring) as a Follow-up Tool for Cumulative Effects Prediction and Management
- Mitigation and Management of Cumulative Effects at the Project and Regional Levels (Including Proponent and Interagency Collaboration, and Descriptions of Management Tools Such as Emissions Trading, Regulatory Approvals, and Creation of Management Entities)
- Case Study on Regional Cumulative Effects Management
- Workshop II on Planning a CEA for an Actual Project in a European Country (the groups will be asked to complete the plan via addressing connections between the project, other actions, and VECs; and potential project mitigation measures and regional management approaches)

Three features of the agenda are the inclusion of two Interactive Workshops, two Case Studies which were worked on by each of the instructors, and two Workshop sessions on planning a CEA. Instructions will be provided for each Workshop, and the participants will be divided into groups to facilitate information exchange and discussion. Each Workshop will conclude with a plenary session focused on group examples and findings. To illustrate, the first Workshop will conclude with the spokesperson from each group describing an actual CEA case study derived from the group's participants. This same pattern will be used in the second Interactive Workshop on cumulative effects management experiences. The groups will be asked to answer specific questions and develop specific information for the two Interactive Workshops. All plenary sessions will be focused on group reports. Finally, it should be noted that participant assignments to groups will be changed for each Workshop. This will be done to facilitate post-course networking.

Training Materials: Each participant will be provided a course manual containing copies of PowerPoint slides, information on case studies, and related workshop materials. In addition, a searchable reference CD will be provided to each participant. The CD will contain several documents on CEA practices, methods, and tools; AES; adaptive management; and cumulative effects management; plus links to several key related websites.

Provisions for Pre- and Post-Conference Communication with Participants: Drs. Canter and Ross will register for and attend the entire IAIA '10 Conference. Registrants or prospective registrants for the course can communicate questions to either Dr. Canter or Dr. Ross via email or telephone. Further, about one month

in advance of the course, the two instructors will send a joint email to the registrants. The email will welcome them to the course and invite them to bring information on CEA examples. Also, during the Conference, course participants can continue informal discussions with both instructors. Finally, in the post-Conference period, participants can communicate with either or both instructors via email or telephone.

## **QUALIFICATIONS OF THE TRAINERS**

Abridged Curriculum Vitae for Dr. Larry Canter: He is a Professor Emeritus from the University of Oklahoma (August, 2000), and is now engaged in teaching NEPA-related short courses and consulting on the preparation and review of impact studies; including those related to CEA. He has written six books on EIA and authored over 12 book chapters, over 80 refereed journal articles, over 75 conference papers, and over 150 research reports, including CEA-focused studies. He has written or participated in the writing of over 25 EAs and EISs on projects such as power plants, gas pipelines and compressor stations, flood control dams, waterway navigation systems, military training, and radioactive waste management. Since 1970, he has taught short courses on EIA or CEA for several U.S. federal agencies and institutions in over 20 countries. During the 1990s at the University of Oklahoma, he was the Sun Company Chair of Ground Water Hydrology, George Lynn Cross Research Professor, and Director, Environmental and Ground Water Institute. He received his Ph.D. in environmental health engineering from the University of Texas, M.S. in sanitary engineering from the University of Illinois, and B.E. in civil engineering from Vanderbilt University. He received the Rose-Hulman Award from IAIA at the organization's annual conference held in Accra, Ghana (May, 2009)

Since 2001, Dr. Canter has consulted on over 12 international and national CEA studies. For example, from 2001 to early 2006, he worked on the navigation system investment plan for the mainstem of the Ohio River. A comprehensive CEA study was conducted for the 981-mile river length that has 19 associated locks and dams. Innovative methods used in the study included "reasonably foreseeable future action" (RFFA) matrices, integrated analyses of the environmental sustainability (ES) of the VECs, and the development of ES alternatives for freshwater mussels and riparian habitat. A second example involved the planning and review of the CEA portion of an EIS for the Fishery Management Plans for Squid, Mackerel, and Butterfish in the Mid-Atlantic Region (2005-2006). In addition, he was the principal author of the May, 2007, NEPA Analysis Guidance Manual for use by the U.S. Army in EIA work related to training ranges, and mission changes. This Guidance Manual is built around the conduction of CEA for 14 identified VECs.

In addition, his refereed CEA publications include two book chapters and nine journal articles. Further, he has made over 25 conference presentations on CEA, with the majority being at IAIA meetings. Finally, he served as the Co-Chair

of IAIA's Special Topic Meeting on Assessing and Managing Cumulative Effects (Nov. 6-9, 2008; Calgary).

Abridged Curriculum Vitae for Dr. Bill Ross: Dr. Ross is a Retired Professor of Environmental Science in the School of Environmental Design, University of Calgary (January, 2009). He has a BSc degree from the University of Manitoba, and a PhD degree in physics from Stanford University. His main academic interests are in EIA and CEA, and energy policy and conservation. He has been a member of several Canadian Environmental Assessment panels, and he has been a member and chair of the Independent Environmental Monitoring Agency for BHP Diamond Mine, Northwest Territories.

Dr. Ross is the author or co-author of numerous peer-reviewed articles, including several related to CEA. Further, he was a co-author of the highly respected "Cumulative Effects Assessment Practitioners Guide" (Canadian Environmental Assessment Agency, 1999). He was the Founding President of the Western and Northern Canada Affiliate of IAIA. Dr. Ross also received IAIA's Rose-Hulman Award at the 2009 annual conference held in Accra.

CEA Short Course Experience: Drs. Canter and Ross have presented over 60 short courses or workshops on CEA, with the majority being 3 to 4 days in duration. Course sponsors have included the International Association for Impact Assessment (1999 in Glasgow, Scotland; 2000 in Hong Kong; 2008 in Perth; and 2009 in Accra), several Federal agencies in the USA and Canada, and the World Bank. Recent examples for Dr. Canter include the presentation of seven 3-day CEA courses (between March, 2005, and September 2006) under the sponsorship of the USEPA (four were in Washington and one each in San Francisco, Chicago, and New York). Drs. Canter and Ross co-taught a CEA course at IAIA '08 and IAIA '09. Regarding participant evaluations of the courses, they have typically received excellent marks on both content and presentation. The evaluations from the IAIA '08 and '09 courses were both very positive. If necessary, specific details on the participant evaluations can be provided. Further, the topical content of these courses has evolved over time, including the incorporation of AES and adaptive management. This IAIA'10 proposed course includes these themes along with an emphasis on cumulative effects management and the delineation of emerging best practice principles.