

CUMULATIVE EFFECTS AND FOLLOW-UP IN IMPACT ASSESSMENT

Training Course at IAIA '14 Viña del Mar, Chile

BASIC INFORMATION

Course Title: Cumulative Effects and Follow-up in Impact Assessment

Level: Intermediate/Advanced

Prerequisites for Participants: Foundation training on EIA (environmental impact assessment) or CEAM (cumulative effects assessment and management) (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 CEAM for environmental impact studies. (Note: these prerequisites do not apply to student participants.)

Language of Delivery: English

Duration: 2 days

Minimum and Maximum Number of Participants: 10 (minimum) to 50 (maximum)

Participants are not required to bring laptops; however, during the course they will be encouraged to describe case studies from their experience.

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 CEAM within EIA processes; (2) to plan the accomplishment of the fundamental requirements for an actual proposed mining or hydropower project from Chile; (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 for large-scale proposals; and (5) to summarize policy choices and collaboration approaches for the development of local and regional cumulative effects mitigation and management initiatives. The premise of this course is that CEAM 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 CEAM professional practice. These procedures and related principles are addressed by identifying key valued ecosystem components (VECs), focusing on those for which CEAM is appropriate; delineating spatial and temporal boundaries for each of the VECs; 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, biodiversity or other offsets, collaborative planning, and existing or planned institutional policies and programs. Practical processes for both preparing and reviewing CEAM -related documents will be emphasized, along with presentations on workshop sessions involving interactive groups. Interchange of information and experiences by the participants will be encouraged within all methods of presentation. The anticipated learning outcomes are achieving a better understanding of the principles and practices of CEAM, and the ability to effectively apply them in study planning and implementation.

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 CEAM
- Critical Importance of CEAM and Challenges in Conducting CEAM Studies
- Interactive Workshop on CEAM Case Studies Based on Participant Experiences (participants will be divided into groups and each group will be asked to identify and describe one example)
- Scale Issues in CEAM
- Addressing CEAM for Multiple Hydropower Projects (Including Identification and Analysis of Other Past, Present, and Future Actions)
- Addressing CEAM for Mining Projects (Including Methods for Identifying Potential Cumulative Effects and Their Linkages to Pertinent VECs)
- Workshop I on Planning a CEAM for a Chilean Project (the participants will be divided into groups and asked to develop a plan for identifying relevant boundaries and other actions to be addressed – one project will be on hydropower and the other on mining – each group will be assigned to one of these projects)

Day 2

- Case Study on the Analysis of Environmental Sustainability (AES) in CEAM
- 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
- Case Study on Regional Cumulative Effects Management
- Workshop II on Planning a CEAM for an Actual Project (the individual groups will be asked to complete their assigned plan via addressing connections between the project, other actions, and VECs; and potential project mitigation measures and regional management approaches)
- Emerging Topics in CEAM – Addressing Biodiversity and Ecosystem Services, and Climate Change

Features of the agenda are the inclusion of one Interactive Workshop, descriptions of several Case Studies involving both students and the instructors, and two Workshop sessions on planning a CEAM study for either hydropower or mining projects. Instructions will be provided for each Workshop and each Workshop will conclude with a plenary session focused on group examples and findings. To illustrate, the first Interactive Workshop will conclude with the spokesperson from each group describing an actual CEAM case study derived from the group's participants. The groups will be asked to answer specific questions and develop specific information for Workshops I and II. 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 in-course and 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 with over 60 selected documents and weblinks will be provided to each participant. The CD will contain papers, reports, and guidance on CEAM practices, methods, and tools; AES; adaptive management; and cumulative effects management; plus links to several key related websites. Some documents will be specifically related to cumulative effects of hydropower projects or mining projects.

Provisions for Pre- and Post-Conference Communication with Participants: Drs. Canter and Ross will register for and attend the entire IAIA'14 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 CEAM examples for discussion. Also, during the Conference, course participants can continue informal discussions with both instructors.

Finally, in the post-Conference period, participants can communicate with each other and either or both instructors via email or telephone.

SECTION 3 – 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 EIA-related short courses and consulting on the preparation and review of impact studies; including those focused to CEAM. He has written six books on EIA and authored over 12 book chapters, over 90 refereed journal articles, over 75 conference papers, and over 150 research reports, including CEAM -focused studies. He has written or participated in the writing of over 30 EAs and EISs on projects such as power plants, gas pipelines and compressor stations, flood control dams, water supply reservoirs, waterway navigation systems, and military training. He has also reviewed EISs and associated studies related to radioactive waste management, water supply lakes, and iron ore mining. Since 1970, he has taught short courses on EIA or CEAM 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 15 international and national CEAM 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 CEAM study was conducted for the 981-mile river length that has 19 associated locks and dams. Innovative methods within the study included usage of “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 CEAM 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 and CEAM work related to training ranges, and mission changes. This Guidance Manual is built around the conduction of CEAM for 14 identified VECs. He was also the co-author (along with Tom Swor) of a Handbook for CEAM prepared for the U.S. Army Corps of Engineers (2011). The Handbook is focused on water resources projects. Dr. Canter and two colleagues also prepared a CEAM-baseline study for the U.S. Army at Ft. Wainwright in Alaska (2012). Further, the Canadian Department of Fisheries and Oceans recently published a report by Dr. Canter and Dr. Barry Sadler; the report addresses the cumulative effects of

multiple activities on fish habitat and fish populations (2012). In 2013, he has prepared a CEAM concepts and methodologies report for ExxonMobil (Houston, TX), and he is an expert consultant for the World Bank and is preparing a Technical Note on CEAM for cascaded hydropower developments in the Himalayan area of India. Finally, he is developing a general guide for preparing EAs and EIAs for the Inter-American Development Bank.

In addition, his refereed CEAM –related publications include two book chapters and over 12 journal articles. Further, he has made over 30 conference presentations on CEAM, with the majority being at IAIA meetings. He also served as the Co-Chair of IAIA’s Special Topic Meeting on Assessing and Managing Cumulative Effects (Nov. 6-9, 2008; Calgary). Finally, in conjunction with Barry Sadler, he organized a Theme Forum entitled “Regional and Ecosystem-Based Approaches in Cumulative Effects Assessment and Management (CEAM) – A Next Generation Approach” for the 33rd Annual Meeting of IAIA held in Calgary (May, 2013). The Theme Forum included five sessions and 18 invited topical presentations.

Abridged Curriculum Vitae for Dr. Bill Ross: Dr. Ross is a Professor Emeritus of Environmental Design in the 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 CEAM. He has been a member of eight Canadian Environmental Assessment panels spanning five decades, and he has been a member and chair of the Independent Environmental Monitoring Agency for Ekati Diamond Mine, Northwest Territories. At the time of this application, he is serving as Chair of an EA panel on a gold-copper mine proposed near Williams Lake, British Columbia. The EA Panel review is addressing both project impacts and cumulative effects, as required by Canadian law.

Dr. Ross is the author or co-author of numerous peer-reviewed articles, including several related to CEAM. 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 65 short courses or workshops on CEAM, 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; 2009 in Accra; 2010 in Geneva; 2012 in Porto; and 2013 in Calgary), several Federal agencies in the USA and Canada, the Banff Centre, and the World Bank. Recent examples for Dr. Canter include the presentation of five CEAM courses (between November, 2011, and July, 2013) under the sponsorship of the U.S. Navy. For Dr. Ross, recent examples include presentations to an Ecuadorian-

Canadian mining company jointly with consultants and the Ecuadorian Ministry of Environment. Regarding participant evaluations of the courses, they have typically received excellent marks on both content and presentation. The evaluations of the IAIA courses have been 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'14 proposed course includes these themes along with an emphasis on hydropower and mining projects, cumulative effects mitigation and management and the delineation of emerging best practice principles.