

CUMULATIVE IMPACTS ASSESSMENT IN ENERGY SECTOR PROJECTS IN CAMEROON: STATE AND LESSONS FROM CURRENT PRACTICES

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Abstract

At the present time, because of energy crisis and electricity load shedding, the government of Cameroon has committed to accelerate the development of oil, gas, hydraulic and mineral resources. A large number of large infrastructure projects in the energy sector are therefore going on. These projects include dams and thermal plants. To investigate these cumulative impact assessment (CIA) practices, four environmental and social impact assessment (ESIA) reports from energy sector projects were selected and analyzed for their content and context. This research unveils a poor consideration of CIA, some reports simply list the cumulative impacts, and others fail to actually analyze the combined effects and underscore a lack of reasonable foreseeable future projects at regional levels. The principal regulatory frameworks that lay down Environmental Impact Assessment (EIA) in Cameroon narrowly require a cumulative impact assessment.

Introduction

EIA was part of the provisions of law n°. 94/01 of 20 January 1994. EIA is prescribed in Article 16 of this legislative body. Law n° 96/12 of 5th August 1996 provided the main legislative bedrock or foundation for environmental management in Cameroon and Article 17 prescribed EIA for all projects which had a propensity to degrade the environment. This Law and subsequent decrees make no distinction between cumulative or other impacts, but expect an EIA to consider the totality of direct or indirect impacts on a receiving environment or on other region. It also required an EIA to consider impacts on the general environment. EIA practitioners have interpreted this law to include cumulative impacts. Within the Cameroonian context, since the publication of the EIA procedural framework legislation, to the best of our knowledge, no thorough study has attempted to critically examine the effectiveness of the CIA practices. This ongoing study, therefore, bridges this major gap by exposing CIA practices in Cameroon and fundamental constraints that can impede its effectiveness. Our study attempts to answer the following questions: which CIA tools and techniques are being used to assess cumulative impacts in energy sector projects in Cameroon? At what levels in EIA process are cumulative effects addressed? Is there any focus on management and mitigation of cumulative impacts? The paper has four further sections. The background of CIA will be outlined in the next section followed by the research methodology and the presentation of the results which encompasses a focus on cumulative impact assessment issues in EIA process in Cameroon. The paper culminates in a discussion of the identified constraints, and specific suggestions, which if adopted, could improve the CIA practices in Cameroon.

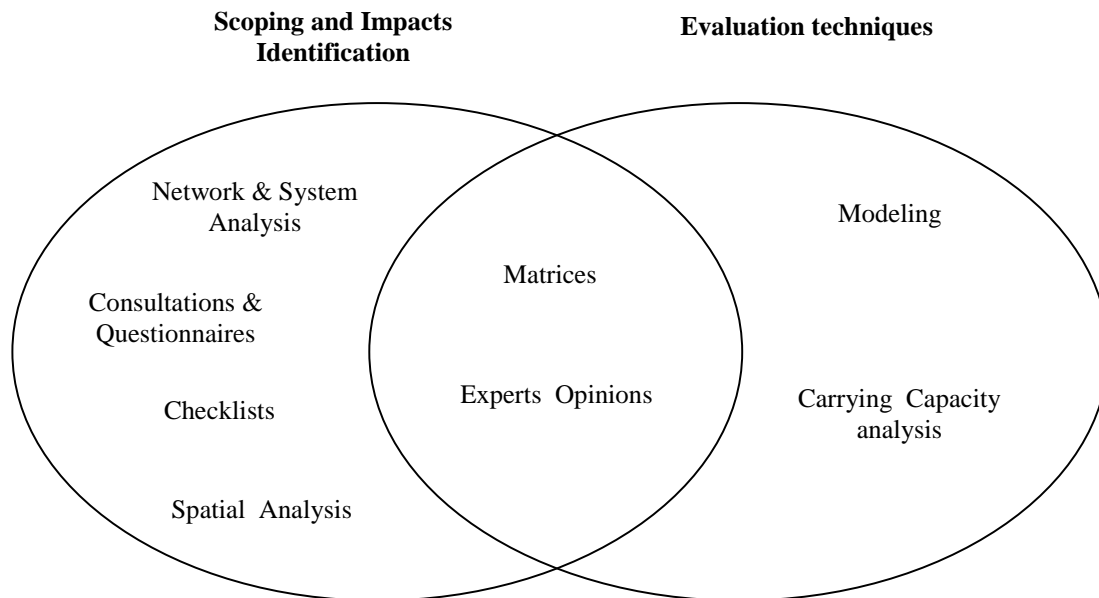
I - Background of Cumulative impacts assessment

The origins of Cumulative impact issues began in the early 1970s when it was realized that proposed projects needed to be analyzed in relation to their location and surrounding land uses (Canter and Ross, 2010). Cumulative impacts are the successive, incremental and combined impacts of one, or more, activities on society, the economy and the environment (Franks and al., 2010). These impacts can be both positive and negative and can vary in intensity as well as spatial and temporal extent (Daniel and al., 2010). Cumulative impacts can result from individually minor, but

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collectively significant actions taking place over a period of time (U.S. EPA, 1999). In the practice of EIA in the USA, the term ‘cumulative effects’ was first mentioned in 1973 in the guidelines of the Council on Environmental Quality, but today, practice of cumulative impact assessment is diversified and extensive with increasing use in the developing world (Larry and al., 2010). A number of financial institutions such as the International Finance Corporation recognize this practice and have set standards that include assessment of cumulative impacts. Nowadays in Cameroon, despite an unclear CIA law proviso, every screening or comprehensive study of a project by a review panel includes a consideration of cumulative impact issues during approval phase of projects subjected to EIA. Despite this recognition, a number of scholars including Hegmann and al., 1999, Canter and Ross (2010), have stated that there are many challenges associated with CIA practices. Both authors unveil cumulative effects uncertainties and difficulties (Canter & Ross, 2010). These include boundaries, time frame, CIA procedure, methods, tools, complexity of CI, data requirement, etc. Determining how large an area around the action should be assessed, how long in time, and how to practically assess the often complex interactions among the actions is another challenge. According to the former, CIA practitioners always face challenge in establishing appropriate boundaries in finding the balance between practical constraints of time, budget and available data, and the need to adequately address complex environmental interactions. To address some of these challenges, many countries have worked to overt what a CIA is supposed to cover and the proper procedure to carry out CIA. The Council of Environment Quality (CEQ) in the USA and the Canadian Environment Assessment Agency (CEAA) have produced a practitioner guidance made up of eleven steps; whereas Canter & Ross (2010), developed a six-steps process based on these eleven steps. These guidelines suggest various methods, tools and approaches of indirect, cumulative impacts and impact interaction. These tools include questionnaires, interviews, and Panels; checklists; matrices; Networks and System Diagrams; Modeling; Trends Analysis; Overlay Mapping and GIS; Carrying Capacity Analysis; Ecosystem Analysis; Economic Impact Analysis and Social Impact Analysis. Figure 1 depicts an overview of CIA evaluation techniques and tools.



Source: European Commission, 1999

Figure 1: Methods and Tools for Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.

II - Research Methodology

This investigation of CIA practices in Cameroon uses multiple sources of evidence in a comparative case study design. Comparative case studies are well suited to understanding complex, contemporary phenomena in real-world settings, where many factors are potentially important. To answer our research questions, we are collecting data from two principal sources:

- For this ongoing study, four EIA reports were selected from energy sector projects and being analyzed for their content and context. This number will be increased when finalizing the study. Energy sector projects were of particular interest because the government of Cameroon since 2006 has committed to accelerate development of oil, gas, mineral resources, and increase electricity supply for urban and industrial usage. Content analysis explored cumulative issues considered for EIA and investigated (1) project purpose and need; (2) characterization and analysis of cumulative impacts; (3) tools and techniques used to assess cumulative impacts; (4) management, mitigation and monitoring of cumulative impacts.

-To gain additional information, beyond documents, personal interviews will be held with EIA practitioners, administrators, community stakeholders, civil society organizations, etc.

Data are analyzed regarding their correspondence to best practices or literature on cumulative impact assessment.

III - Results and discussion

Table 1: Framework analysis

Project purpose and need (1)	Do the terms of reference require CIA? (2)	Are cumulative impacts mentioned in the EIA reports? (2)	Which tools or techniques are used to address cumulative issues (3)	At what levels of the EIA process are cumulative impacts considered? (3)	Is there any focus on management, monitoring and mitigation of cumulative impacts? (4)
The Lom Pangar dam: it is made up of a 45 m high dam and a reservoir covering 540 km ² area, a hydropower plant with a 30 MW capacity at the foot of the dam, a transmission line of 90 kV linking the power plant and the interconnected network at Bertoua over a distance of about 110 km. As a regulating dam, the aim is to improve the guaranteed water flow of the Sanaga River.	Yes	Yes, there is a specific CIA report	Matrices. Project area was divided into subareas and each impact assessed was associated with a time boundaries (5 years & 20 years) Assessment was based on key sectorial development plans or strategies	Scoping, identification, characterization and evaluation of the impacts	Yes, responsibilities for managing and monitoring CI are set in the report
The hydroelectric power station of Mekin: it consists of the building a dam, a central spillway reinforced in concrete with an energy dissipation system in slope, a powerhouse at the foot of the dam which an installation power of 15 MW, a high voltage line of 110 HV on	Yes	Yes	Matrices. Each impact assessed was associated with a time boundaries (3 years & 10 years)	Identification, characterization and evaluation of the impacts No past (Dja reserve, forest logging, etc.), present (mining)	No

about 33.1 km. The Mekin small-scale hydropower project will reinforce the security of power grid in the whole southern area of the country				activities) and future projects analyzed	
Memve'ele dam project: The site of Memve'ele is located on the river Ntem, in the South-West of Cameroon, near to the border with Equatorial Guinea. It is a dam project to be operated as a run-of-river scheme with the only purpose of producing electricity	Yes	Yes	Matrices. Each impact assessed was associated with a time boundaries (5 years & 10 years)	Identification, characterization and evaluation of the impacts - Past and future projects are listed but they are not thoroughly analyzed	No
The Bini à Warak hydroelectric project: This project consists of a river dam, a feeder canal, the hydropower plant, a tail water canal of 225 m and the high voltage power lines of 225 Kv of approximately 41 km. The Bini a Warak Project comprises a river dam and the production of hydroelectricity.	No	Yes but without any linkage with past, present and reasonable future projects	Matrices but it does not consider cumulative impacts.	NA	No

Table 1 shows that the terms of reference (ToRs) of three projects reviewed require CIA even though it is not specifically mentioned in either the 1996 environmental law or the subsequent Decree. This is because in Cameroon, international standards such as The World Bank operational policies are used in many infrastructure projects subjected to an EIA. Cumulative impacts assessment is required in these ToRs but no specific technical and procedural direction are provided.

The reports reviewed unveil insufficient treatment of cumulative impacts. Lom Pangar dam development process dedicated a specific report to cumulative impacts whereas other projects set a paragraph to cumulative impacts. Cumulative impacts are more elaborated in Lom Pangar report. A six step generic described by Canter and Ross (2010) was used in this case. Other projects did not systematically follow the six steps. They just identified and characterized the cumulative impacts with less analysis. Bini à Warak project identified current cumulative activities but did not consider past and reasonable future activities because it lacks information and data on future projects.

Table 1 also shows a focus on matrices as cumulative impacts assessment tool. Matrices were used at the scoping and impacts identification levels. Using matrices at these levels is suitable (European Union, 1999), because they address overlapping activities and in turn influence the significance of an issue or opportunity which, if considered in isolation may appear minor (Franks and al., 2010). By the way, there are a lot of tools that can be use to address CIA. No justification is given in the evaluated reports about the choice of matrices. Even if it is suitable at some levels, should it be use independently of the project (large, small) or of the nature of the valued ecosystem and social components? The choice of the method used should be explain in order to satisfy every stakeholder. Assertion without analysis always leads to misinterpretation or misunderstanding.

Based on the reports reviewed, CIA practice seems to rely on some modifications of EIA methodology described in the EIA law. Some projects such as Lom pangar address cumulative impacts from the scoping to monitoring and evaluation levels. Only Lom Pangar case considers mitigation of cumulative impacts, and provides a management framework for cumulative impacts

with a set of indicators and responsibilities. Bini à Warak, Mekin and Memve'élé projects focused on cumulative impacts at scoping and impacts identification level and did not address cumulative issues over public consultation meetings. They failed to consider management and monitoring of cumulative impacts. This is a weakness because management, monitoring and mitigation of cumulative impacts are crucial steps in CIA practice.

IV - Preliminary suggestions

Based on the above mentioned preliminary findings, the following preliminary suggestions are advanced:

- 1 - A clear technical direction on cumulative impacts should be described in the ToRs;
- 2 - The government of Cameroon should normally revise the EIA law and include a clear proviso on cumulative impacts assessment;
- 3 - A regional database on past, present and reasonable future activities should be developed for each region. These preliminary findings also underscore the necessity of developing regional development plan.
- 4- The use of matrices is not justified in these reports. The choice of tools to be used among the large number should be justified according to the project, the nature of the valued ecosystem and social components. As an example, water or air and land use system cannot be address with the same tool. Models can be suitable for the water or air components whereas matrice is indicated for land use system

Conclusion

The purpose of this ongoing study was to expose CIA practices in Cameroon and fundamental constraints that can impede its effectiveness. To achieve this aim, four EIA reports and the EIA legal framework have been reviewed. The EIA Law makes no distinction between cumulative or other impacts, and does not explicitly require cumulative impact assessment. Cumulative impacts are required in the ToRs without a technical direction. Matrices, the most common tool used by practitioners, are not subject to any justification. Unclear proviso in EIA law and lack of adequate data on past and reasonable future projects are constraints that impede CIA practice in Cameroon. Future research activities such as interviews with key stakeholders will highlight other findings with focus on constraints.

References

- **Canter, L. W. and Atkinson S. F.** Adaptive management with integrated decision making: an emerging tool for cumulative effects management. Impact Assessment and Project Appraisal, 28(4), December 2010, pages 287–297
- **Canter, L. W.** conceptual models, matrices, networks, and adaptive management – emerging methods for CEA, Presented at Assessing and Managing Cumulative Environmental Effects, Special Topic Meeting, International Association for Impact Assessment, November 6-9, 2008, Calgary, Alberta, Canada.
- **Canter, L., Ross, B.** State and practices of cumulative effects assessment and management: the good, the bad and the ugly. Impact Assessment and Project Appraisal, 28(4), December 2010, pages 261–268
- **Daniel, M. F., Brereton, D. and Moran, C.J.** Managing the cumulative impacts of coal mining on regional communities and environments in Australia. Impact Assessment and Project Appraisal, 28(4), December 2010, pages 299–312
- **Decree n°. 2005/0577/PM** of February 23rd, 2005 launching Cameroon EIA procedure.
- **European Commission**, 1999. Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions. European Commission, Luxembourg.
<http://europa.eu.int/comm/environment/pubs/home.htm>

- Franks, DM, Brereton, D, Moran, CJ, Sarker, T and T, Cohen. 2010.** Cumulative impacts - a good practice guide for the Australian coal mining industry. Centre for Social Responsibility in Mining & Centre for Water in the Minerals Industry, Sustainable Minerals Institute, The University of Queensland. Australian Coal Association Research Program. Brisbane.
- **Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, L. Kingsley, W. Ross, H. Spaling and D. Stalker. 1999.** Cumulative Effects Assessment Practitioners Guide. Prepared by AXYS Environmental Consulting Ltd. and the CEA Working Group for the Canadian Environmental Assessment Agency, Hull, Quebec.
 - **Larry C., Atkinson, SF., and Sadler, B.** Introduction to a special issue on cumulative effects assessment and management. Impact Assessment and Project Appraisal, 28(4), December 2010, page 259–260.
 - **Law n° 96/12 of 5th August 1996** relating to the management of the environment.
 - **Michael D. Smith,.** Recent trends in cumulative impact case law. Paper presented at the National Association of Environmental Professionals Annual Conference, Alexandria, VA, April 16-19, 2005.
 - **U.S. EPA.** 1999. Consideration of Cumulative Impacts in EPA Review of NEPA Documents, www.epa.gov/compliance/resources/policies/nepa/cumulative.pdf