

Public involvement focusing on alternatives: a case of a bridge project in Cambodia

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Abstract: The discussion of alternatives is called the heart of environmental impact statement, which provides a clear basis for choice among alternatives by the decision makers and the public. However, little is known about the actual discussion of alternatives. This study examined public involvement by applying quantitative text analysis to the minutes from meetings of a bridge project in Cambodia. Results of the analysis showed that local people appeared to participate in meetings actively but showed little interest in considerations of alternatives. The discussion of alternatives was somewhat one-sided and overly technical. It is possible that local people did not understand the contents of discussions clearly. Improving the discussion of alternatives is required through a simple alternatives analysis, good quality meeting materials and facilitation of discussion. Further research is needed to explore the analysis technique to show distinctions of alternatives simply and objectively.

Key Words: public involvement, discussion of alternatives, quantitative text analysis, bridge project, Cambodia

Introduction

The US Council on Environmental Quality (CEQ 1978) calls the discussion of alternatives “the heart of the environmental impact statement.” The comparison between the proposed action and the alternatives provides a clear basis for choice among options by the decision makers and the public. The key challenge to environmental impact assessment (EIA) practitioners in comparative assessment is to show distinctions objectively, and as simply as possible. The adoption of unnecessarily complicated techniques can confuse decision makers and exclude the public from effective participation (World Bank 1996).

Hajkowicz (2008) showed that the multiple criteria analysis (MCA) method could help stakeholders make group decisions, even when they held strongly conflicting preferences. Janssen

(2001) noted that although computationally simple, weighted summation (WS) provided a reasonable solution in many applications and the most important issue was selecting the correct criteria and right options in the first place. The previous research examined the decision-making process using MCA. However, little is known about the actual discussion of alternatives.

This study aimed at a better understanding of the actual discussion of alternatives through quantitative text analysis (QTA) of the minutes from the meetings of a bridge project in Cambodia as well as improving the discussion of alternatives.

1. Data and methods

1.1 Second Mekong Bridge Project in Cambodia

The Japan International Cooperation Agency (JICA), which assists and supports developing countries as the executing agency of Japan's

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official development assistance (ODA), conducted a feasibility study on the Second Mekong Bridge Project in Cambodia from April 2004 to March 2006 (JICA 2006). The minutes from the meetings of this project were analyzed for the study. There were two reasons for the choice of this project. First, the minutes from the meetings to be analyzed by QTA were available, with fully transcribed statements of speakers in accordance with the order of speech. Second, the institutional constraints on public involvement were improved in collaboration with JICA, suggesting that analysis of the process might yield new findings.

The meeting materials were prepared in the local language, and disseminated near the project site and through a website. In addition to the Ministry of Public Works and Transport (MPWT), which was the project proponent, many categories of stakeholders participated in meetings including local people, minorities, representatives from NGOs, the ferry service, universities, the media, and the private sector. Stakeholder meetings were held 15 times in total at three stages in Phnom Penh and Neak Loeung (the project site), with total of more than 1,595 participants. JICA participated in all meetings in a supervisory role (Table 1).

The first stage involved an explanation of the project and public consultation process, and a discussion of the scoping of EIA. In the second stage the alternatives and the best option were discussed. In the third stage results of EIA and an outline of the resettlement action plan (RAP) were discussed. The government, universities, and private sector stakeholders participated in meetings in Phnom Penh, and locals and minorities participated in meetings at Neak Loeung. MPWT encouraged local people to participate by sending invitation letters. MPWT held meetings for minority groups three times in October and December 2004, and March 2005. A simultaneous interpreter between Khmer and English and a facilitator were arranged. The meetings were recorded in entirety and transcribed fully, with minutes from the meetings prepared and disclosed to the public at commune

offices and MPWT. When one option was selected in March 2005, MPWT invited public comments for one and a half month, receiving 22 comments.

Prior to the construction of the bridge, a ferry service was the only available method of crossing the Mekong River at Neak Loeung, about 50 kilometers south-east from Phnom Penh; cars waiting for the ferry crossing at Neak Loeung caused traffic congestion on the National Road No. 1. During the busy seasons cars had to wait for up to seven hours to board a ferry. The project proponents (MPWT and consultants) compared three bridge routes (A, B and C) and selected route A before public consultation. Four options for improving transportation that were analyzed and discussed included no action, ferry improvement, bridge construction (route A), and ferry improvement plus bridge construction (route A). The alternatives analysis technique was an analytic hierarchy process (AHP) that compared 13 evaluation criteria: stability, safety, sustainability, traffic demand, investment efficiency, regional economy, noise and vibration, traffic accidents, other environmental impacts, resettlement, land use, local livelihoods, and other social impacts. The option of ferry improvement plus bridge construction (route A) was selected after public consultation and an AHP score of .480. The second, third and fourth options were a bridge (route A), ferry improvement, and no action, with AHP scores of .234, .191 and .095 respectively.

1.2 Quantitative text analysis

The minutes from the meetings were changed to text data and analyzed using QTA via KH Coder, free analytical software (Higuchi 2014). The QTA is a method of content analysis that analyses text data using quantitative analysis methods and provides a quantitative overview of text data. One benefit is to allow analysts to search the data using coding rules. In this study five coding rules (environmental issues, social issues, development issues, alternatives analysis, and public involvement) were prepared and the appearance ratio was indicated with every category of stakeholders.

Table 1. Overview of stakeholder meetings

Stage	Date and place	Agenda	Attendance and stakeholders
1st stage	May 24, 2004 Phnom Penh	Outline of project, public consultation process, and scoping of EIA	142 (MPWT, ministries and agencies, local governments, communes, Neak Loeung ferry, NGOs, universities, private sector, embassies, JICA)
	June 21, 2004 Neak Loeung		107 (MPWT, ministries and agencies, 76 local people, Neak Loeung ferry, NGOs, JICA)
2nd stage	Oct. 7, 2004 Phnom Penh	Alternatives analysis method and regional development scenario	71 (MPWT, ministries and agencies, local governments, Neak Loeung ferry, universities, media, donors, embassies, JICA)
	Oct. 28, 2004 Neak Loeung		55 (MPWT, 41 minorities (39 Vietnamese and two Muslims), NGOs, JICA)
	Dec. 27, 2004 Phnom Penh	AHP, alternatives, and evaluation criteria	83 (MPWT, ministries and agencies, local governments, communes, Neak Loeung ferry, NGOs, universities, media, donors, private sector, JICA)
	Dec. 28, 2004 Neak Loeung		132 (MPWT, 79 local people, two Chams, JICA)
	Mar. 10, 2005 Phnom Penh	Best option selected and consensus process	Not available
	June 3, 2005 Phnom Penh	Public consultation of RAP	82 (MPWT, ministries and agencies, local governments, communes, Neak Loeung ferry, universities, media, donors, private sector, embassies, JICA)
	June 7, 2005 Neak Loeung		114 (MPWT, ministries and agencies, 98 local people, NGOs, JICA)
	June 8, 2005 Neak Loeung		Over 100 (MPWT, 100 local people, JICA)
	July 11, 2005 Neak Loeung		Over 172 (MPWT, 172 local people, JICA)
	Sep. 20, 2005 Phnom Penh	Interim result of EIA, preliminary bridge design and outline of RAP	92 (MPWT, ministries and agencies, local governments, communes, Neak Loeung ferry, universities, media, donors, private sector, JICA)
	Sep. 21, 2005 Neak Loeung		Over 122 (MPWT, 122 local people, NGOs, JICA)
	Jan. 24, 2006 Phnom Penh	Final results of EIA, feasibility study including bridge design, and a draft framework of RAP	83 (MPWT, ministries and agencies, communes, Neak Loeung ferry, universities, embassies, JICA)
	Jan. 29, 2006 Neak Loeung		Over 240 (MPWT, ministries and agencies, 240 local people, JICA)
	Total		Over 1,595

Source: Data from JICA 2006.

According to the coding rules, environmental issues were suggested by the words water, air, noise, or smell; social issues by relocation, resettlement, house, land, compensate, compensation, job, worker, livelihood, accident, or AIDS; development issues by economic, economy, market, investment, transportation, or transport; alternatives analysis by alternative, criterion, or option; and public involvement by participate, stakeholder, or consultation. These words were selected based on their high appearance frequency. By using coding rules, it is possible to compare the portion of discussion about five topics. Articles, pronouns, figures, punctuation marks, and so on were excluded from the analysis.

2. Results

2.1 Appearance ratio of five coding rules

The appearance ratio of five coding rules is shown for 17 categories of stakeholders (Table 2). The appearance ratio was calculated by dividing the number of paragraphs in which a specific coding appeared by the total number of all paragraphs. The number of paragraphs that formed parts of MPWT, local people and consultants was 72, 66, and 51 respectively. They accounted for two thirds of all discussions (287 paragraphs). The topics of major concern were social and development issues, while interest in environmental issues, public involvement and alternatives analysis was limited.

Specifically, the primary concerns of local people were related to social issues, with just a single instance of discussion about alternatives.

2.2 Discussion of alternatives

MPWT and consultants carefully explained four alternatives, 13 evaluation criteria and how AHP scores were calculated to local people but they did not appear to discuss them. Only once during a meeting on October 28, 2004 in the second stage, did a local person express an opinion about alternatives, saying “When we have a bridge...more cars and motorcycles and the atmosphere...polluted, however, the bridge is the best option.” NGOs commented on alternatives twice, first stating on May 24, 2004, “The alternatives to avoid the negative impacts should be considered.” In a second comment on December 27, 2004 in regard to evaluation criteria, an NGO representative insisted that criteria were different depending on the evaluator; for example the consultant engineer criteria and the environmental NGO criteria were different. MPWT responded to the question of who would decide on the evaluation criteria, explaining that priority would be placed on the economic criteria.

Consequently alternatives and criteria prepared by the consultants were not modified and one alternative was selected based on their proposal.

3. Discussion

3.1 Selecting a good alternative

The consultants provided local people with a briefing session on AHP for deeper comprehension of the process, but local people did not ask any questions about options, or the selected option and reasons for selection. The AHP is a common MCA method using a pair-wise comparison, and is a useful technique that utilizes the experience and values of the evaluators. While EIA practitioners were very familiar with this method, it was probably difficult for local people to understand a pair-wise comparison and calculate scores.

The AHP scores of the selected option and the second-placed one were .480 and .234. The difference was clear at a glance and no opinion appeared to be given. The environmental criterion was noise and vibration but the impacts of soil and sedimentation, and flora and fauna were larger than noise and vibration based on the study result. Those impact items should have been included in evaluation criteria.

Table 2. Appearance ratio of five coding rules (significant at * $p < .05$)

Stakeholder	Environmental issues		Social issues		Development issues		Alternatives analysis		Public involvement		Number of paragraphs
MPWT	2	3%	30	42%	23	32%	10	14%	9	13%	72
Local people	5	8%	41	62%	17	26%	1	2%	0	0%	66
Consultant	2	4%	9	18%	9	18%	21	41%	3	6%	51
Commune	0	0%	9	53%	4	24%	0	0%	0	0%	17
Business	2	13%	9	60%	1	7%	0	0%	0	0%	15
NGOs	1	7%	7	50%	1	7%	2	14%	3	21%	14
District	0	0%	3	25%	2	17%	2	17%	0	0%	12
MRC	1	9%	1	9%	5	45%	0	0%	1	9%	11
Facilitator	1	14%	2	29%	0	0%	1	14%	0	0%	7
University	0	0%	1	20%	1	20%	0	0%	0	0%	5
City Hall	0	0%	0	0%	2	40%	0	0%	0	0%	5
MoEF	0	0%	0	0%	2	40%	0	0%	1	20%	5
MoE	1	50%	0	0%	1	50%	0	0%	0	0%	2
Port	0	0%	1	50%	0	0%	0	0%	0	0%	2
MAC	0	0%	0	0%	0	0%	0	0%	0	0%	1
MoA	0	0%	0	0%	0	0%	0	0%	0	0%	1
MoPT	0	0%	0	0%	0	0%	0	0%	0	0%	1
Total	15	5%	113	39%	68	24%	37	13%	17	6%	287
Chi-square	146.7		187.8*		166.5		189.5*		195.5*		

Note : MRC: Mekong River Commission, MoEF: Ministry of Economic and Finance, MoE: Ministry of Environment, MAC: Mine Action Committee, MoA: Ministry of Agriculture, MoPT: Ministry of Post and Telecommunication

The representative from the environmental NGO who asked about evaluation criteria provided a good opportunity to reflect on the use of alternatives analysis. Incorporating the opinions of stakeholders could improve the quality of decision, and maintain the credibility and legitimacy of the project. If other consultants had proposed other alternatives and evaluation criteria using a simple alternatives analysis technique, the local people might have discussed options. The use of alternatives analysis, incorporating a suitable number of credible options and evaluation criteria, and clearly understood and better communicated, needs to be explored.

3.2 Better understanding contents of discussion

Public involvement in this bridge project was improved with JICA's assistance in areas such as information dissemination, meetings at the project site, and participation of many kinds of stakeholders. Although necessary actions for improvement were taken, the discussion was somewhat one-sided and not as active as it might have been. It is possible that local people did not understand the contents of the discussion clearly. Citizens' understanding of EIA report was low and in order to improve their understanding, a computer-generated visual simulation was proposed, enabling people to see the impacts of proposed projects and making it easier to understand the report (Sullivan et al. 1996). Good quality meeting materials that appeal to the visual senses and better facilitation of discussion could be the proposed solutions for clearer understanding of such reports.

Conclusions

Improving discussion of alternatives could be realized through a simple alternatives analysis, good quality meeting materials, and facilitation of discussion. Reflecting opinions of stakeholders could improve the quality of decisions, and maintain the credibility and legitimacy of the project. Simply removing institutional constraints was insufficient for increasing public involvement

in decision making. Further research is needed to explore alternatives analysis on ways of visually representing distinctions between alternatives simply and objectively and of generating active discussion of alternatives.

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