

การเปรียบเทียบเทคนิคการระบุผู้มีส่วนเกี่ยวข้องในกระบวนการตัดสินใจทางสิ่งแวดล้อม
Comparison of Stakeholder Identification Techniques in Environmental Decision Making:
A Case Study of Integrated Water Management in Samut Songkhram Province

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บทคัดย่อ

การศึกษาค้นคว้าครั้งนี้มีจุดประสงค์เพื่อศึกษาเปรียบเทียบเทคนิคในการระบุผู้มีส่วนเกี่ยวข้อง และทำการประเมินเทคนิคในการระบุผู้มีส่วนเกี่ยวข้อง ซึ่งเทคนิคที่ใช้มีความแตกต่างกันจำนวน 4 เทคนิค ประกอบด้วย การระบุโดยวิธีเมตริกซ์ การระบุโดยผู้เชี่ยวชาญ วิธีการลูกโซ่และกระบวนการสนทนากลุ่มย่อย โดยใช้กรณีศึกษาเรื่องการจัดการน้ำเชิงบูรณาการในพื้นที่แม่น้ำแม่กลอง จังหวัดสมุทรสงคราม โดยผู้วิจัยได้กำหนดให้ประสิทธิภาพของผลลัพธ์ เวลา ค่าใช้จ่ายและสิ่งสนับสนุนเพิ่มเติมเป็นเกณฑ์ที่ใช้ในการประเมินประสิทธิภาพของแต่ละเทคนิคดังกล่าวข้างต้น

ผู้วิจัยพบว่า ผลลัพธ์ที่ได้จากการระบุผู้มีส่วนเกี่ยวข้องที่มีความคล้ายคลึงกันในทุกเทคนิค คือ กลุ่มของเกษตรกร ชาวประมง ชาวบ้านในพื้นที่และเจ้าหน้าที่ราชการ สำหรับกลุ่มอื่นๆ พบว่าแต่ละเทคนิคให้ผลลัพธ์ในการระบุที่แตกต่างกัน ส่วนกลุ่มผู้มีส่วนเกี่ยวข้องที่เกิดจากการระบุโดยเทคนิคเพียงเทคนิคเดียวโดยเฉพาะมี 15 กลุ่ม สำหรับประสิทธิภาพของแต่ละเทคนิคพบว่า เทคนิคเมตริกซ์ให้รายละเอียดในแง่ของอิทธิพลและความสำคัญได้ แต่ก็ควรคำนึงในเรื่องเวลา ค่าใช้จ่ายและความพยายามในการดำเนินการเมื่อผู้ศึกษามีความรู้ไม่เพียงพอเกี่ยวกับกรณีศึกษาและมีข้อมูลน้อย สำหรับเทคนิคอื่นๆ ประสิทธิภาพของผลลัพธ์จะขึ้นอยู่กับผู้ดำเนินการวิจัย

โดยสรุป เทคนิคแต่ละเทคนิคมีจุดแข็งและจุดอ่อนที่แตกต่างกัน ไม่มีเทคนิคใดที่ดีที่สุดเมื่อพิจารณาตามเกณฑ์ของเวลาและค่าใช้จ่าย ดังนั้น ไม่ว่าจะเลือกใช้เทคนิคในการระบุผู้มีส่วนเกี่ยวข้องเพียงเทคนิคเดียวหรือหลายเทคนิคร่วมกันจึงขึ้นอยู่กับจุดประสงค์ของการศึกษา ความซับซ้อนของปัญหา เวลา และค่าใช้จ่ายเป็นสำคัญ

คำสำคัญ : ผู้มีส่วนเกี่ยวข้อง การระบุผู้มีส่วนเกี่ยวข้อง การจัดการน้ำแบบบูรณาการ จังหวัดสมุทรสงคราม

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ABSTRACT

This research aimed to compare efficiency of four different stakeholder identification techniques i.e. identification by using the matrices, experts, snowball sampling and focus group discussion. Evaluation criteria involved effectiveness of the results, time, expense and additional supports. A case study of integrated water management was conducted on the Mae Klong river in Samut Songkhram province.

For the stakeholder identification outcomes, the similarities among the outcomes of all techniques were apparently shown in farmers and fishermen, local villagers and government officers. For other categories, different techniques provided different results. There were fifteen stakeholder groups that were suggested by only one particular technique. For the efficiency of each technique, the stakeholder identification by using the matrices implicitly provided degrees of significance of stakeholders in terms of importance and influence. However, it should consider time, cost and effort consuming process when the examiner had inadequate knowledge about the case study and there was very little information available. For other techniques, the results were likely subjective.

In a conclusion, each technique had found different strong and weak point. To the most appropriate stakeholder identification technique should consider the objective, complexity of the problem, time, budgets as well as information availability taken into account.

Keywords : stakeholder, stakeholder identification, integrated water management, Samut Songkhram province

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INTRODUCTION

In recent years, public participation apparently increases its importance in decision making involving environmental sustainability from local to international scales (Grimble & Chan, 1995; Grimble & Wellard, 1997; Brown *et al.*, 1998; 2000; 2001; Webler *et al.*, 2001; Hemmati, 2002, Reed, 2008). Public participation involves the bottom-up approach i.e. provides opportunity to local people and local agency that will be affected by the proposed policy program to play their roles in every steps of decision making from sharing information and concept, setting goals and relevant criteria for the problem solving and evaluating alternatives to establishing a management plan. This can lead to better decisions i.e. they could be able to solve problems and in addition respond to real needs of local people (Beierle and Cayford, 2002). There are then many laws, regulations, and policies enforcing public participation to be involved in the environmental decision-making such as Environmental Impact Assessment (EIA) and

Strategic Environmental Assessment (SEA). Hence, there is need for decision makers to recognize who should be involved in the decisions. To understand that, it is known as stakeholder analysis.

The stakeholder approach was developed in the first of the business and management sectors for solving problems in complex social systems (Phillips *et al.*, 2003). Today, Stakeholder Analysis (SA) is also recognised as a powerful tool for sustainable natural resource management (Grimble & Chan, 1995; Grimble & Wellard, 1997; Brown *et al.*, 1998; 2000; 2001; Turner *et al.*, 2000; Hemmati, 2002). Reed *et al.* (2009) defined stakeholder analysis as 'a process that would define aspects of a social and natural system affected by a decision or action, identify individuals and groups who were affected by or could affect those parts of the system and prioritize these individuals and groups for involvement in the decision-making process'. Stakeholder analysis consists of i) identifying stakeholders; ii) categorizing stakeholders; and iii) investigating relationships between stakeholders. There is no universal method of applying stakeholder analysis (Grimble & Chan, 1995; Grimble & Wellard, 1997; Friedman and Miles, 2006; Reed *et al.*, 2009). The approach needs to be adapted to particular purposes, study contexts and also stages of the analysis. It can involve comparative analysis of the perspectives, objectives and interests of stakeholders at several levels (Grimble & Chan, 1995; Grimble & Wellard, 1997; Phillips *et al.*, 2003). Currently, models of stakeholder analysis apply a range of tools on both qualitative and quantitative data to understand stakeholders, their positions, influences with other groups, and interests in a particular reform (Friedman and Miles, 2006; Reed *et al.*, 2009).

This research aimed to investigate and evaluate techniques for identifying stakeholders (the first step of stakeholder analysis). A case of water management was chosen because water-related problems were still serious in Thailand. These included not only water shortage or flood but also problems in terms of water quality. The problems caused severe damage and impacted economy and society. According to announcement by Department of water resources (2008), there was a serious case of very poor water quality found in the Lower Tha Chin basin. A case study of the Mae Klong river basin in Samut Songkhram province was then selected. In the area, water resource was vital to life because it was used for sanitary management, agriculture, fishery, industry as well as transportation. There were water gates to block the salt intrusion. Unfortunately, it changed the flow regime of the canals leading to ecological imbalance as well as socio-economical problems (Piumsomboon, 2000). To solve the problem, the integrated water management plan had to be proposed and to achieve that relevant stakeholders should be involved in the decision making process.

METHODOLOGY

Applying the Stakeholder Identification Techniques to the Case Study

Matrices Each relevant person from a list of possible stakeholders made by the researcher, as the examiner, were plotted onto a two dimensional matrix according to his/her significance in terms of the degrees of importance and influence. Importance refers to the significance of the problem/study area for each stakeholder. Hence, an important stakeholder would be who lives in the study area or whose livelihood depends on the natural resources in the area. Influence is related to the power (e.g. due to ownership or legal authority) that stakeholders have to control the uses of, and access to resources. The assessment was undertaken underlying information from literature reviews, field survey and interviews with the villagers, the village leaders and the farmers in the area.

Experts A group of relevant experts was interviewed for their opinions towards a group of people that played significant roles in the case study. Semi structured- interviews were applied. A total of nine experts including three local people, three government officers and three academics were selected for the interviews. Local people were a village headman and two villagers who were well-respected as having a lot of knowledge about the study area. Experts from the government were an officer of Samut Songkhram Agricultural Office, an officer from the Ministry of Natural Resources and Environment and the Royal Irrigation Department officer. Academic experts were three lecturers of the Faculty of Environment and Resource Studies, Mahidol University.

Snowball Sampling Initially, a farmer, as the first stakeholder named by the researcher, was asked, by means of the semi structured- interviews, to address other two stakeholders and the first stakeholder addressed was then asked to identify other two stakeholders. The processes were repeated until the first stakeholder recommended was replicated. Final results were summarized by the researcher. For this research, the interviews were conducted with six people from four different occupations.

Focus Group Discussion A total of twenty-four participants including a group of villagers, farmers and government officers were invited for the discussion. These were then divided into four sub-groups for a focus group discussion. Each sub-group consisted of all different careers and a moderator (i.e. researcher or assistants). The group was asked to brainstorm on the subject of identifying stakeholders, and conducted by the moderator.

Evaluating the Techniques

Criteria were integrated from experts' suggestion employed to evaluate efficiency of stakeholder identification techniques for this research employed to evaluate effectiveness of the stakeholder identification techniques for this research (Simon, 1960; Rauschmayer and Risse, 2004 and Rowe and

Frewer, 2000). The criteria was the efficiency of the results, time and expense. Amount of time involved for interview, discussion and making appointment. Expense included for undertaking and travelling. In addition, supports in terms of supplementary information and advice from the outsiders such as the experts and researchers were also investigated.

RESULTS

Stakeholder Identification Outcomes

As seen in table 1, the similarities among the outcomes of all techniques are apparently shown in farmers and fishermen, local villagers and government officers categories.

In farmers and fishermen category, the stakeholders identified by every technique are snakeskin gourami fish farmers, shrimp farmers, paddy field farmers and orchard and vegetables farmers. For government officers, the officers of the Royal Irrigation Department, Department of Water Resource, Pollution Control Department, Samut Songkhram Agricultural Office and Sub-district Administration Organization were addressed by all four techniques. In addition, saving group of Phrak Nam Daeng sub-district, pig farm owners and factories were identified as stakeholders by all techniques.

Stakeholders that were suggested from three techniques out of four are sub-district headman, village headman and the officers of Department of Fisheries (not recommended by snowball sampling), Mae Klong lover group (not suggested by the focus group discussion) and the officers of Department of Livestock (not specified by the matrices). With respect to the differences, from table 2, there are fifteen stakeholder groups that were suggested by only one particular technique. Academics were particularly recommended by the matrices. Similarly, some of the government officers i.e. the officers of Water Resources Office Section 7, Samut Songkhram Waterwork, Samut Songkhram Land Development Office, Samut Songkhram Community Development Office, Samut Songkhram Chamber of Commerce, Coordination Center for Rural Research were only appeared in the matrices. Samut Songkhram Health Center was considered as relevant by the experts. The stakeholders only identified by snowball sampling were local waterway users and local fishermen. The focus group discussion recommended garbage dumpers, non-local fishermen, students and researchers as relevant.

Due to the nature of the stakeholder identification process that is likely subjective, different results could be caused by many reasons. Different point of views towards the case study and different levels of knowledge, experiences and familiarity with the study area could cause the different opinions. For example, the outcomes of the matrices assessed by the researcher showed the concern about the role of the local government officers and academics more than other techniques.

Table 1 Stakeholder Identification Outcomes.

Stakeholders	Techniques			
	Identification by Using the Matrices	Identification by the Experts	Snowball Sampling	Focus Group Discussion
1. Farmers and Fishermen				
Snakeskin gourami fish farmers	/	/	/	/
Shrimps farmers	/	/	/	/
Paddy field farmers	/	/	/	/
Orchards and vegetables farmers	/	/	/	/
Local fishermen			/	
Non-local fishermen				/
2. Local villagers				
Local Villagers	/	/	/	/
Sub-district Headman and Village Headman	/	/		/
3. Government officers				
The Royal Irrigation Department	/	/	/	/
Department of Water Resource	/	/	/	/
Pollution Control Department	/	/	/	/
Department of Livestock		/	/	/
Ministry of Natural Resources and Environment	/	/		
Water Resources Office Section 7	/			
Sub-district Administration Organization and Provincial Administration Organization	/	/	/	/
Samut Songkhram Agricultural Office	/	/	/	/
Samut Songkhram Waterwork	/			
Samut Songkhram Land Development Office	/			
Samut Songkhram Community Development Office	/			
Samut Songkhram Chamber of Commerce	/			
District Chief Officer		/		/
Governor		/		/
Provincial Industry		/		/
Samut Songkhram Health Center		/		
Coordination Center for Rural Research	/			
4. Academics				
Lecturers at Kasetsart University	/			
Lecturers at Mahidol University	/			
Lecturers at Silpakorn University	/			
5. Other				
Mae Klong lover group	/	/	/	
Saving group of Phrak Nam Daeng Sub-district	/	/	/	/
Pig farm Owners	/	/	/	/
Fisheries Agency	/	/		/
Factories	/	/	/	/
Local waterway users			/	
Garbage dumpers				/
Students and Researchers				/

On the other hand, the outcomes of snowball sampling and focus group discussions are mostly undertaken by local people and local officers who are closer to the problem rather than concerned specific groups of people i.e. the local waterway users, fishermen and garbage dumpers.

Effectiveness of the Techniques

Summary of the effectiveness of each stakeholder identification technique in terms of the effectiveness of the results, time, expense and additional supports required is presented in table 2.

Table 2 Effectiveness of the Stakeholder Identification Techniques

Techniques	Efficiency of the Results	Time	Cost	Additional Supports Required
1. Matrices	results are tangible; key stakeholders can also be specified	depending on background data/ information available and expertise of the examiner	depending on information required	supplementary information and advice from relevant people may be required depending on expertise of the examiner
2. Experts	results are subjective depending on knowledge and experience of the experts	depending on number of the experts and their location	depending on number of the experts and their location	supplementary information may be required depending on expertise of the experts
3. Snowball Sampling	results are subjective depending on knowledge and experience of the interviewees	depending on number of the interviewees and their location	depending on number of the interviewees and their location	-
4. Focus Group Discussion	results are subjective depending on knowledge and experience of the participants	controllable but there is some additional time required for preparation	high	moderators for the meeting

CONCLUSIONS

Stakeholders identified by four different techniques are mainly similar but slightly different in details. However, the best technique for identifying stakeholders cannot be revealed. Each technique was found to have different strengths and weaknesses, as briefly presented in table 4. The stakeholder

identification by using the matrices implicitly provided degrees of significance of stakeholders in terms of importance and influence. However, it should consider time, cost and effort consuming process when the examiner has inadequate knowledge and/or experiences about the case study and there was very little information available. For other remaining techniques, the results were likely subjective. For the identification by the experts and snowball sampling techniques, a great deal of time and cost were spent on travelling. For the identification by the experts, supplement information might be required for the most effective decision making. In contrast, snowball sampling and the focus group discussion required less supports in terms of information but interviewing skills and meeting moderating skills. A focus group discussion could however be considered as the most cost consuming for arrangement. In a conclusion, each technique was found to have different strengths and weaknesses. Following Grimble & Chan (1995) and Grimble & Wellard (1997), for the most appropriate application of stakeholder analysis, the approach needs to be adapted to particular purposes and study contexts. However, the research found that complexity of the problem, time, budgets as well as information availability (should also be) taken into account in selecting any technique. For a case of complicated problem with adequate information, the matrices might be one of the most appropriate techniques. But, when more details about the relationships among the stakeholders including views on the problem and possible conflicts are required, a focus group discussion could be a suitable process.

REFERENCES

- Beierle T.C. and Cayford J. 2002. Democracy in practice: Public participation in environmental decisions. Resources for the Future, Washington, DC.
- Brown, K., Adger, N., Tompkins, E., Bacon, P., Shim, D., Young, K. 1998. CSERGE Working Paper: A Framework for Incorporating Stakeholder Participation in Marine Resource Management: A Case Study in Tobago. University of East Anglia and University Collage of London, UK.
- Brown, K., Adger, N., Tompkins, E., Bacon, P., Shim, D., Young, K. 2000. CSERGE Working Paper: Trade-off Analysis for Marine Protected Area Management. University of East Anglia and University Collage of London, UK.
- Brown K., Tompkins, E., Adger, N. W. 2001. Trade-off Analysis for Participatory Coastal Zone Decision-Making. Overseas Development Group (ODG), University of East Anglia, UK.
- Department of Water Resources. 2008. Thailand's water situation. Role in Thailand' water management. Department of Water Resources.
- Friedman A. and Miles S. 2006. Stakeholders: theory and practice. Oxford University Press, Oxford.

- Grimble, R. and Chan, M. 1995. Stakeholder analysis for natural resource management in developing countries. *Natural Resources Forum*. 19: pp. 113-124.
- Grimble, R. and Wellard, K. 1997. Stakeholder methodologies in natural resource management: a review of principles, contexts, experiences and opportunities. *Agricultural Systems*. 55: pp. 173-193.
- Hemmati, M. (2002). *Multi-Stakeholder Processes for Governance and Sustainability: Beyond Deadlock and Conflict*. Earthscan Publications, London.
- Piumsomboon A. (2000). Mae Klong River. [Online]. Available: <http://data.ecology.su.semnodeAsia/Thailandmaeklongrivermaeklongbud.htm>. [2007 December 8].
- Phillips, R, Freeman, R. and Wicks, A. 2003. What stakeholder theory is not. *Business Ethics Quarterly*. 13: pp. 479-502.
- Rauschmayer F and Risse N. 2004. A framework for the selection of participatory approaches for SEA. *Environmental Impact Assessment Review*. P. 650-666.
- Reed S.M. 2008. Stakeholder participation for environmental management: a literature review. Sustainability Research Institute (SRI), School of Earth and Environment, the University of Leeds, Leeds, LS2 9JT, United Kingdom.
- Reed S.M, Graves A, Dandy N, Posthumus H, Hubacek K, Morris J, Prell C, Quinn H.C and Stringer C. L. 2009. Who'in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management*. UK.
- Rowe G and Frewer L. G. 2000. Public participation methods: a framework for evaluation. *Science, Technology & Human Values*.
- Simon H.A. 1960. *The new science of management*. New York, NY: Harper and Row.
- Turner, K., van der Bergh, J., Soderqvist, T., Barendregt, A., van der Straaten, J., Maltby, E. and van Ierland, E. 2000. Ecological-economic analysis of wetlands: scientific integration for management and policy. *Ecological Economics*. 35: pp. 7-23.
- Webler T., Tuler S. and Krueger R. 2001. What is a good public participation process? Five perspectives from the public, *Environmental Management*. 27: p. 435-450.