

Factors influencing Khon Kaen University community's participation in environmental management

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Abstract

The study identifies factors influencing Khon Kaen University (KKU) community's participation in environmental management implemented on campus. It examines KKU community's participation and also attitudes toward current environmental management activities. Self-administered questionnaires were used for data collection. In total, 1,071 people, including 406 students, 485 faculty and staff members and 180 business owners participated in the study. Approximately, 30% of the participants agreed with current KKU's environmental management activities. However, 39.42% or about one third of the faculty and staff group just slightly agreed with the activities. The two most critical environmental problems on KKU campus include ineffective solid waste management and traffic congestion together with insufficient parking areas. The majority of all participants (about 44%) moderately participated in KKU environmental management activities. Only 15% obtained a high participation level. A factor influencing environmental management participation of all KKU population groups is attitude towards current KKU's environmental management activities (p -value < 0.05). Those who agreed upon the activities are more likely to participate. Moreover for the faculty and staff member group, living on or off campus shows significant connection with participation (p -value < 0.05). People living on campus tend to more often participate in KKU activities than those living off campus. Finally, in the student group knowledge and understanding on environmental issues (p -value < 0.05) has significant relation with participation. However, students who obtained a high level of knowledge did not prove having a high level of participation but otherwise.

Keywords: participation, KKU community, environmental management

Introduction

Khon Kaen University (KKU) is one of the leading educational institutes in Thailand covering an area of 5,800 Rais². KKU is home of approximately 8,790 faculty and staff members

(KKU Personnel Office, 2007) and over 26,000 students (KKU Registrar Office, 2007). In addition to the academic community, the Northeast's largest hospital locates on KKU campus as well as many businesses and international institutes. For over 40 years, KKU community continues growing,

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² 1 ha = 6.25 Rais

but this comes with evidently observed environmental problems, including traffic congestion, high energy consumption, loss of campus green areas and waste management. To reduce problems as well as to create good-living campus environments, KKU develops a university management plan (2007-2010). Under Strategy No. 5: Main goal No. 6, KKU is building a good living community, including campus parks, protected green areas and necessary facilities for its residents and visitors.

Besides the highly committed administration body, KKU community's participation is also the key for accomplishing this management goal. Community awareness of its own environments and the idea that everyone is responsible for our environment needs to be shared. However, making this point across the large and diverse community as such KKU requires well understanding of community backgrounds, including knowledge and attitudes. Furthermore, knowing what trigger the community to participate in environmental management activities and/or change their daily practices will help making management plan implementation possible.

The work presented in this article was funded by KKU under the KKU institutional research project during 2007-2008. The goal is to answer what influences KKU community's participation in environmental management. Moreover, this research represents an attempt to develop an environmental friendly culture within the academic community that can become a role model for other communities. The research identifies factors that influence KKU community's participation in environmental management on KKU main campus. It examines KKU community participation and also attitudes toward current environmental management activities.

Study methods and scope

The research focused on KKU community members in the main campus. KKU community members were divided into 3 groups, including faculty and staff members, currently enrolled students in all classes (the academic year 2007), and business and/or shop owners on campus. Community participation was defined to include participating in planning and decision-making, being informed of projects/activities to be conducted on campus, involving in projects/activities, and sharing benefits from environmental management projects implemented on KKU main campus.

The research is survey-based, consisting of onsite observation, self-administered questionnaire, and personal interview of KKU administration board representative. The questionnaire includes participant general information, background knowledge on environments, attitudes toward current KKU's environmental management projects, community participation and factors hindering and/or supporting community participation. Online questionnaire survey was conducted for the group of faculty and staff members; while in the student and business owner groups a person direct contact was employed using an accidental sampling technique. Data were analyzed using descriptive statistics. In addition, Chi-square Test of Independence was used to examine as to what factors associate with KKU community's participation.

Study results

In total, 1,071 people participated in the questionnaire, including 485 faculty and staff members, 406 students and 180 business owners. The majority of faculty and staff respondents works

in Medical Science faculties (43.20% of the group), while students mostly come from Science and Technology faculties (47.04% of responded students). Furthermore, 79.44% of the business group owns a restaurant/drink shop on campus, including permanent shops/restaurants (74.44%), food/drink stands (21.67%) and push carts (3.89%). Over 50% of the students live in university dormitories, while the majority of faculty and staff members as well as business owners live off campus. Consider educational levels, the faculty and staff member group obtained a wide range from bachelor's to doctoral degrees. The majority of student participants are undergraduate students, while the business owners obtained high school and/or vocational school diplomas or equivalent degrees. All three groups agreed that television was the main media to keep them updated about environment issues, followed by newspapers, magazines and advertisement boards. Only the faculty and staff member and student groups reported of using the internet to access environmental news, while the business owner group received news from

radios, village broadcast towers, and/or friends and neighbors.

Knowledge and understanding about the environment

Participants in all three groups were asked to answer questions about general environmental knowledge. Basically, the questions are similar among the three only a few questions were modified to fit the group backgrounds. Participant responses were evaluated and grouped into different knowledge and understanding levels. The study reveals that most participants had good knowledge and understanding about the environment (Table 1). They misunderstood only a few points, specifically on what were considered alternative energy. However on this particular issue, the reason respondents selected the wrong answer is perhaps due to a sentence arrangement, which intended to lure the respondents if they did not carefully read the statement given. Furthermore, another question that the majority of students answered incorrectly is impact from greenhouse effect. They could not really differ between greenhouse effect and ozone depletion.

Table 1. The level of knowledge and understanding on the environment of KKU community members (percentage of the participants).

Level of knowledge and understanding (%)	Poor	Moderate	Good	Mean	SD
Faculty & staff members	--	26.39	73.61	3.96*	0.48
Students	4.70	39.20	55.70	6.34**	1.56
Business owners	3.90	19.40	76.70	4.00*	0.70

- Note:** 1) Respondents chose the answers related to the environment that most matched their opinions. Some questions were different in each participant groups to fit their backgrounds. * 5 = highest score and ** 8 = highest score.
 2) The environmental topics that the majority of participants gave the incorrect answers.
 2.1) Faculty & staff members - the examples of important alternative energy were sun, wind, water, and petroleum.
 2.2) Students - the impact of greenhouse effect: global climate, ozone depletion, and greenhouse effect.
 2.3) Business owners - the examples of important alternative energy were sun, wind, water, and Petroleum.

KKU community's opinions toward current campus environments and management activities

On this topic, participants were also asked whether they satisfied with current campus

environments and/or agreed with environmental management activities conducted by the University by selecting “strongly agreed”, “moderately agreed” or “slightly agreed”. Questionnaire questions are similar among the three participant groups, only a few questions were adjusted to fit participant backgrounds. For example, questions for the business owners focused on rules and regulations imposed on them when conducting businesses on KKU campus, while questions for students, faculty and staff members were about school and working environments.

Overall, the respondents moderately agreed with environmental management activities on campus. Nevertheless, 39.42% or over one third of the faculty and staff respondents expressed only slight agreement (Table 2). Furthermore, the respondents indicated the two most urgent environmental problems, including ineffective waste management and traffic congestion together with insufficient parking zones (Figure 1). Causes of environmental problems on KKU campus that all the three participant groups pointed out include ineffective enforcement of rules and regulations, ineffective management plan and lack of KKU community participation in environmental management activities.

Table 2. KKU community's opinions toward current campus environments and management activities.

Level of agreement (%)	Slightly agreed	Moderately agreed	Strongly agreed	Mean	SD
Faculty & staffs	39.42	46.89	13.69	2.72	0.88
Students	5.70	64.30	30.00	3.43	0.64
Business Owners	6.67	67.78	25.56	3.27	0.64

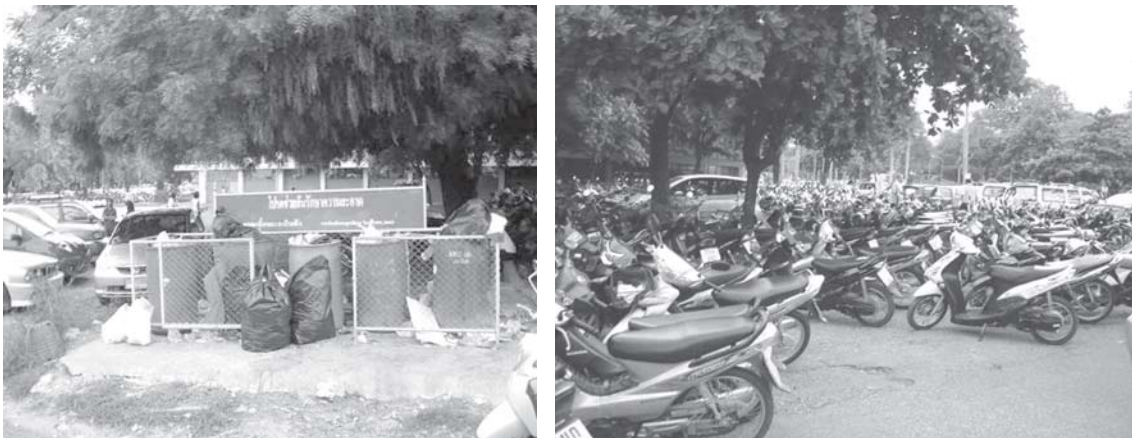


Figure 1. A waste dump site and trash outside the garbage bins waiting to be collected and lots of motorcycles in KKU campus.

To solve environmental problems the respondents expressed several suggestions. One of the three most

frequently listed is that KKU community must be informed when development projects would

be implemented either through advertisement boards, KKU radio and website. Furthermore, faculties and departments must develop their own management plans that reflect KKU's environmental management goal, which is to build a good living and environmental friendly campus. Finally, community campaign and environmental education are necessary and should be done on a regular basis.

KKU community's participation in environmental management activities

Respondents identified their participation in the given activities either regular, sometimes or infrequent. Their responses were analyzed and classified as low, moderate, or high level of participation. The study shows that activities the groups of faculty and staff and students reported of infrequently involved include being a member of environmental groups and reflecting environmental concerns to KKU and/or faculty administration boards. Firstly, this may be due to a small number

of environmental groups and were known only within a small group of people. Therefore, a general KKU public did not join the groups. Similarly, communication channels between the administration boards and KKU community might be limited. Furthermore, persons who reflected their concerns might not get any prompt responses, therefore discourage to do so. For the business owner group, they did not directly participate in any management activities but only made donations to activities because it is easy and less time consuming. In summary, the majority of the three respondent groups moderately participated in KKU environmental management activities. Only 15% identified themselves as a regular participant in the University activities (Table 3). Their most important motivations for participation are environmental awareness and expectation of benefit returns from well managed environments.

Table 3. Levels of participation in environmental management activities in KKU.

Level of Participation (%)	Low (Infrequent)	Moderate (sometimes)	High (Regular)	Mean	SD
1) Faculty & staff members	42.68	43.93	13.39	1.86	0.43
2) Students	35.71	47.54	16.75	1.93	0.45
3) Business Owners	32.78	52.78	14.44	1.88	0.42

Factors influencing KKU community's participation in environmental management

The Chi-square Test of Independence was used for statistical test to determine factors influencing KKU community's participation. Participant backgrounds, including general information, background knowledge and attitudes toward KKU's current environments and management activities were treated as an independent variable.

A factor influencing environmental management participation of all KKU population groups is attitude towards current KKU's environmental management activities (p-value < 0.05). Those who agreed upon the activities are more likely to participate. Moreover for the faculty and staff member group, living on or off campus shows significant connection with participation (p-value < 0.05). People living on campus tend to more often participate in KKU's activities

than those living off campus. Finally, in the student group knowledge and understanding on the environment ($p\text{-value} < 0.05$) has significant relation

with participation. However, students who obtained a high level of knowledge did not prove having a high level of participation but show otherwise (Table 4).

Table 4. Statistical test showing factors significantly associated with KKU's participation.

Independent variables showing significant connection with community participation	Level of participation								
	1	2	3	1	2	3	1	2	3
	Faculty & staff			Students			Business Owners		
1) Opinions toward KKU current environmental management									
--Slightly agreed	90	75	23	17	6	0	8	4	0
--Moderately agreed	87	111	24	102	127	32	37	70	15
--Strongly agreed	26	23	16	26	60	36	14	21	11
χ^2 -value	13.03			38.53			11.28		
p-value	0.011			0.000			0.024		
Contingency coefficient	0.163			0.294			0.243		
2) Living on vs. off campus									
--On campus	75	103	30						
--Off campus	129	107	34						
χ^2 -value	6.69			ns			ns		
p-value	0.030			NA			NA		
Contingency coefficient	0.117			NA			NA		
3) Knowledge and understanding toward the environment									
--Low				3	8	8			
--Moderate				50	74	35			
--High				91	110	25			
χ^2 -value	ns			18.67			ns		
p-value	NA			0.001			NA		
Contingency coefficient	NA			0.210			NA		

Note:

- Number 1, 2, and 3 represent the level of participation, including low (infrequent), moderate (sometimes), and high (regular), respectively.
- Contingency coefficient illustrates the strength of association between tested variables. The higher contingency coefficient value represents the stronger variable association.
- ns = not significant at 95% significant level and NA = not applicable.

Discussion and Conclusions

Overall, the majority of KKU members have good knowledge and understanding about the environment, though their participation in environmental management activities is somewhat low. Only about 15% of the respondents could identify themselves as participating in management activities on a regular basis so obtained a high participation level. Yet the majority of the respondents were assessed as having moderate participation, but this might have to do with how they expressed their actions. When people did not actually involve in activities or were not sure if what they did fall into a so-called environmental management practice being asked, they tended to present themselves as if participated in activities or complied in a moderate level.

Generally, knowledge and understanding towards the environment is a fundamental factor influencing a person's decision to participate in environmental activities. Those who obtain good knowledge and understanding are assumed to be more aware so that are likely to participate in activities. This is one of the reasons why environmental education and/or campaign are promoted to raise people's environmental awareness. It is to improve people's participation, which is one of the key requirements for environmental management success. However, although knowledge and understanding is necessary, it cannot guarantee if people would actually decide to participate unless they could expect any good/satisfactory returns from their actions. This explains why the level of knowledge and understanding about the environment shows inconsistent connection with participation among the three KKU community groups. The significant connection was observed only in the student group

and even so the connection represents a reverse outcome. Students who obtained a high knowledge level did not prove having a high level of participation but indicate otherwise. The students with good knowledge and understanding could lose interests in participating without regular and motivating campaign to stimulate their awareness, especially when doing so did not show immediate impacts. Hence, they chose to ignore or pay attention to something else more exciting. For the faculty and staff members and the business owners, low participation may be due to time constraint, limited and not well-disseminated activities and unclear returns from investing time and/or changing behaviors.

The statistical test proves that the key factor influencing all three KKU community groups' participation is attitude towards current environmental management (i.e., slightly, moderately and strongly agreed). Those who strongly agreed with KKU's management activities are more likely to get involved because it is possible for them to expect what outcomes from such activities could be. And they might be able to benefit those. As a result, to promote community participation for effective environmental management, it is important to make the community understood management objectives, project's pros and cons, and possible outcomes. Advertisement boards, radio broadcasts, and websites can be used to pass along words and information about management and development projects to the community with effective and accessible means for them to return feedbacks.

Lastly, a project to be implemented but with immediate notice to the community is likely to get negative feedbacks and small participation, specifically in the academic community such as KKU, which consists of diverse background residents ranging from low to highly educated members.

The good part of having well educated community members is that if K KU's projects are clear, transparent and sensible, high participation can be expected. But if the projects represent otherwise, it will also be very difficult to convince the community to participate. Surely, without or just small participation, it is unlikely for any management and development projects to become effective and successful.

Suggested activities to improve K KU community's participation in environmental management

The study shows that K KU community's participation in environmental management is low. Furthermore, the current participation basically falls into a left side of the participation spectrum developed by the International Association for Public Participation (2000), which from left to right includes getting informed, consulting, involving, collaborating and empowering. The majority of K KU members did not actually participate in university planning and decision-making even when the University opened a forum and/or organized a formal public hearing. Generally, they involved in activities already decided and shared benefits. In fact, decision-making is considered the most important participation procedure because it represents that all community parties are perceived as direct stakeholders and so given opportunities to decide the community own future. Thus, for effective and successful implementation of development and environmental management projects in the future, K KU needs to improve its community participation. Below are the suggested activities.

Firstly, K KU must develop effective means for the community to get notified about development and management projects and their feedbacks must be recognized in decision-making processes. Those means have to be easy access, reliable and up to date. Secondly, in addition to the University environmental management plan, K KU should promote development of the plan down to the faculty and/or department level. Environmental management projects can be part of teaching-learning activities, research and working environment. Thirdly, community participation campaign is necessary and needs to be done on a regular basis to keep the community be aware of their environment. Activities to promote community participation that will be put into action must reflect the community's backgrounds. Particularly, students-K KU's largest community members, need a so-called in trend kind of activities to get their attention and participation. This includes those similar to beauty and the Stars contests but more focused on environmental friendly activities such as K KU recycling designers and K KU environment representatives.

Furthermore, environmental education is also the key to improve K KU community's participation. Although good knowledge and understanding showed conflicting connection with K KU's participation, it is the underlying requirement of good quality human resources. Finally, all projects put into action must be evaluated whether they are efficient and effective. The lessons learned can be used to improve future projects and better serve the community's needs. But above all, K KU's long-term commitment with good governance and effective enforcement of rules and regulations is the most crucial driving force for successful community participation and environmental management.

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