

Social Capital and Development Trends in Rural Areas

Volume 6



Kiyoshi KOBAYASHI
Hans WESTLUND
Hayeong JEONG
editors

MARG
(Marginal Areas Research Group)

Social Capital and Development Trends in Rural Areas Volume 6

This volume contains the examined and selected papers of the 6th International Workshop on “Social Capital and Development Trends in Japan's and Sweden's Countryside.” It was held on July 1-2, 2009 in Ishigaki Island, Japan. The workshop aims to discuss sustainable development of rural areas and provide innovative academic perspective regarding social capital. The volume consists of 19 contributions by authors from Japan and Sweden, successfully accepted through peer review. They present interesting and diverse viewpoints on the interface between the concept of social capital and the development of rural regions.

MARG (Marginal Areas Research Group)

ISBN: 978-4-907830-07-6

Contents

Preface	i
1 Change the Social Structure and Social Capital	1
1.1 Introduction	1
1.2 The content of this book	2
1.2.1 Part I: The Growth of Social Capital and Entrepreneurship Approach	2
1.2.2 Part II: Management of Commons and Social Capital	3
1.2.3 Part III: Monitoring and Measuring Social Capital	5
1.2.4 Part 3. Spontaneous Institutional Arrangements and Stimulating Local Innovation	6
2 Societal entrepreneurship and social capital	9
2.1 Social Capital and Entrepreneurship	9
2.2 Sectors of Societal Entrepreneurship	10
2.3 Is Social Capital Promoting Entrepreneurship in Each Sector?	11
2.4 Is Social Capital Promoting Innovative, Entrepreneurial Collaboration be- tween Sectors of Society?	13
2.5 Conclusions for Local and Regional Growth Policies	18
3 Social capital for sustainable rural regions	21
3.1 Introduction	21
3.2 Strategic Complementarity and Equilibria	22
3.2.1 Strategic Complementarity	22
3.2.2 Externality and Strategic Complementarity	23
3.3 Innovation of Public Policy	25
3.3.1 The Type of Public Policy	25
3.3.2 Structured Policy	27
3.3.3 Equilibrium Selection Policy	28
3.4 Public Private Partnership	29
3.4.1 Voluntary Association	29
3.4.2 Accountability	30
3.4.3 Voluntary Association and Legitimacy	31
3.4.4 Voluntary Association and Professional	33
3.5 Regional Learning Process	34
3.5.1 Regional Learning Approach	34

3.5.2	Trust Relationship between Government and Citizen	35
3.6	conclusion	36
4	Spontaneous Institutions as Cooperative Equilibrium in Repeatedly- Played and Linked Games	41
4.1	Introduction	41
4.2	Model	42
4.2.1	Review of Models Related to Our Special Interests	42
4.2.2	A Baseline Model	42
4.2.3	A Simplified Game -Two Activity / Two Person Game-	45
4.3	Numerical Analysis	45
4.3.1	Notation for Equilibrium	45
4.3.2	Numerical Results	46
4.4	Concluding Remarks	53
5	A Socio-Economic Accounting Model for a Marginal Mountainous Re- gion	55
5.1	Introduction	55
5.2	The Model	57
5.2.1	Assumptions	57
5.2.2	Households' Behavior	58
5.2.3	Firms' Behavior	61
5.2.4	Local Government	63
5.2.5	Equilibrium	63
5.3	Social Economic Accounting Matrix	64
5.3.1	Calculation of Market Equilibrium	64
5.3.2	A Case Study	65
5.4	Conclusion	67
5.5	References	69
6	Joint Facilities and the Creation of Social Capital in the Swedish Coun- tryside	71
6.1	Introduction	71
6.2	Joint Facilities, Spatial Clubs, and Local Public Goods	73
6.2.1	Joint Facilities	73
6.2.2	Are Joint Facilities Club Goods or Local Public Goods?	74
6.2.3	The Tragedy of the Commons	76
6.2.4	The Initiation of a Joint Facility - Solving the Prisoners' Dilemma	77
6.3	Joint Facilities in Sweden	78
6.3.1	Localisation of Joint Facilities and Joint Property Units	81
6.4	Joint Facilities as Institutionalised Local Social Capital	82
6.5	Joint Facilities as Part of a Management Policy for Rural Areas and Small Towns	86
6.6	Conclusions	88

7	Resource Allocation and Social Capital	91
7.1	Introduction	91
7.2	Trends of Mangrove Forest Allocation System	92
7.2.1	Improvement of Local Access to Mangrove Benefit	92
7.2.2	Partnership and Benefit Sharing	92
7.3	Resource Allocation Systems	93
7.3.1	Subtractability and Excludability	93
7.3.2	Capabilities based Resource Allocation	94
7.3.3	Costs for Capabilities based Resource Allocation	95
7.3.4	Four Resource Allocation Systems and Impacts on the Poor	96
7.4	Conclusion	98
7.5	References	99
8	Environmental Impacts of Ecotourism on Mangrove: Case Study of Kuala Selangor Nature Park	101
8.1	Introduction	101
8.2	Research Goal	102
8.3	Research Objectives	102
8.4	Research Methodology	102
8.5	Kuala Selangor Nature Park (KSNP)	103
8.6	Results and Findings	104
8.6.1	List of Fauna	104
8.6.2	List of Flora	105
8.6.3	Inventory and Observation	105
8.7	Laboratory Testing	105
8.8	Conclusions	106
8.9	Recommendations	108
9	Access to Water and Community Network - A Case of Singosari District, Malang Regency, Indonesia -	113
9.1	Introduction	113
9.2	The Field Survey Method	115
9.3	Results and Discussions	115
9.3.1	Access to Water	115
9.3.2	Demographic Information of the Respondents	117
9.3.3	Level of Satisfaction towards Access to Water	120
9.3.4	Community Network	122
9.4	Conclusion	125
10	Social Capital in Rural Studies in Japan - An Examination of Actual Forms of Social Capital Especially in Rural Japan -	129
10.1	Introduction	129
10.2	Social Ties and Social Association in Rural Studies in Japan	130
10.2.1	Theory of Modernization in Japan	130
10.2.2	Social Ties and Social Association in Rural Japan	130

10.2.3	Combination in Social Association of Rural Community in Japan	132
10.2.4	Fundamental Rural Community in Studies in Social Geography	133
10.3	Heritage of Rural Community Studies in Japan and Social Capital	133
10.4	Social Capital and Concerning Structure	134
10.4.1	Social Capital in Network System	135
10.4.2	Essential Elements of Social Capital	135
10.5	Short Remarks about Essential Qualities of Social Capital in Rural Japan	137
11	Migration and Settlement Patterns among Young People and Families in Swedish Rural and Urban Areas	141
11.1	Migration - The Prime Driver behind Regional Population Development	141
11.2	Sweden - Sparsely Populated with Monocentric and Small Polycentric Structures	144
11.3	Different Locations, Different Kinds of Social Capital, Different Precondi- tions	146
11.4	Monocentric and Polycentric Labour Market Regions	148
11.5	The Swedish Urban-Rural System and the North-South Divide	149
11.6	Differing Ages - Differing Settlement Patterns?	152
11.7	Rural and Sparsely Populated Areas - Dying-out Regions?	154
11.8	A Typology for Sustainable Demographic Development	156
11.9	Demographic Development in Urban and Rural Areas - Convergence or Divergence	161
11.10	Migration, Settlement Patterns and Social Capital - Some Tentative Remarks	167
12	Monitoring Individual Sociability to Learn from Daily Activity	173
12.1	Introduction	173
12.2	Issue of Daily Social Relations	174
12.2.1	Review of Daily Social Relations	174
12.2.2	Relational-Alone Modeling and Marginal Indices	176
12.3	Relational-Alone Activity Model	178
12.3.1	Relational Activity and Alone Activity	178
12.3.2	Individual Attributes on Relational-Alone Activity	178
12.3.3	Relational Activity Model with Frequent Zero	179
12.3.4	Method to Estimate Relational-Alone Parameter	180
12.4	Marginal Effect on Relational-Alone Activity	181
12.4.1	Marginal Probability Effect on Alone Activity	182
12.4.2	Marginal Effect on Intensity of Relational-Activity	183
12.5	Applied Results	184
12.5.1	Study of Japanese Countryside	184
12.5.2	Estimated Results	186
12.5.3	Policy Implication for Better Sociability	189
12.6	Concluding Remarks	190

13 Consideration of Entrepreneurial Community Formation using Social Capital	193
13.1 Introduction	193
13.2 Transformation of human networks and the rise of local community	194
13.2.1 Outline of the Regions Investigated	194
13.2.2 Transformation of Human Networks	194
13.3 Roles of inter-organizational bridging	196
13.3.1 Past and Present Inter-Organizational Networks	196
13.3.2 Network Stratification by the <i>ISM</i> Method	197
13.3.3 Network Density in Oma Town	199
13.3.4 Analysis on the Effectiveness of Bridging in Communities	201
13.4 Formation of entrepreneurial local communities in a knowledge-based society in the future	203
13.5 Conclusions	205
14 Building Citizen Participatory Program Logic Models in Marginal Areas	207
14.1 Introduction	207
14.2 How to Structure a Program Logic Model	208
14.2.1 Settlement of a Strategic Aim	208
14.2.2 The Steps of Structuring a Model	209
14.2.3 The Evaluation Framework	210
14.3 An Example in Nichinan Town	210
14.3.1 The Outline of Study Area	210
14.3.2 The Purpose and the Organization of Structuring a Logic Model . .	212
14.3.3 The Settlement of a Strategic Aim and Intermediate Aims	212
14.3.4 The Settlement of Outcome Indicators	213
14.3.5 Baseline Survey and the Selection of Prior Issues	214
14.3.6 Settlement of Action Plans	216
14.4 Conclusion	217
15 Implementation of Community Planning Using Square Workshop Method - A Case Study of Anamizu Town-	225
15.1 Introduction	225
15.2 Process Design for Community Planning in Post-earthquake Revitalization	226
15.2.1 Community Planning Process	226
15.2.2 Square-Table Workshop Method	228
15.3 Case Study in Anamizu Town	229
15.3.1 Damage of Anamizu Town	229
15.3.2 Background of Fukko Salon	229
15.3.3 Outline of Fukko Salon	231
15.3.4 Implemented Action Plans	234
15.4 Future Perspective	234

16 What is required for bus transportation managed by residents? - A case study in a rural area in Japan-	239
16.1 Introduction	239
16.2 Definition of Resident Participation in a Bus Transportation Service and Method of Participation	240
16.2.1 Definition of Resident Participation in a Bust Transportation Service	240
16.2.2 Assumption of Resident's Attitudes towards Participation in Management of a Bus Transportation Service	241
16.3 Case Study and Data Overview	242
16.3.1 Case Study Overview	242
16.3.2 Survey Overview	242
16.3.3 Measurement of Social Capital	243
16.4 Attitudes of Residents Towards Participation in Management of Bus Transportation Services and Factor Analysis	244
16.4.1 Attitudes towards Participation in Management of Bus Transportation Services	244
16.4.2 Relation of Social Capital and Attitude towards Participation in Management of a Bus Transportation Service	245
16.4.3 Factor Analysis of Residents' Attitudes towards Participation in Management of a Bus Service	245
16.5 Community Activities for Running a Bus Service with Resident Participation	247
16.5.1 Background of Activities	247
16.5.2 Organization for Argument	248
16.5.3 Method of Conveying Activities to the Entire Community	248
16.5.4 Contents of Discussions of the Ekawa Area Transportation Conference	249
16.5.5 System in which the Local Government Commissions a Community Organization to Run a Local Bus Service	250
16.6 Conclusion	251
17 Do Startups in the Agricultural Sector Generate Employment in the Rest of the Economy? - An Arellano-Bond Dynamic Panel Study	255
17.1 Introduction	255
17.2 Entrepreneurship, Startups, and Job Creation	257
17.3 Urban-Rural Perspective of the Swedish Economy	259
17.4 Method, Data, and Empirical Analysis	263
17.5 Conclusions	270
18 Persuasive communication to promote local shopping and local social interaction	275
18.1 Introduction	275
18.2 Method	278
18.2.1 Experimental Site	278
18.2.2 Experimental Design	278
18.2.3 Participants	279

18.2.4	Survey items	280
18.3	Results	281
18.3.1	Attitude Modification	281
18.3.2	Statistical Analysis of Shopping Behavior	281
18.3.3	Changes in Shopping Behaviors	281
18.4	Conclusion	283
19	A consideration about the roles of the engineers to the community improvement	287
19.1	Introduction	287
19.2	Review of Social Dilemmas and Social Capital Theory	288
19.2.1	Argument for Management/Administration of Public Goods in Community	288
19.2.2	Theory of Social Capital	290
19.3	Best Practices of Problem Solving Technique by Engineers	291
19.3.1	ECO-POINT in Nagoya City	291
19.3.2	Community Improvement in the Neighborhood of Hikawa Shrine	292
19.3.3	Disaster Prevention Education	294
19.3.4	Resort Town Planning Project in Kusatsu	294
19.4	Discussion	295
19.4.1	Possibilities from the Point of View of the Bonding Type	296
19.4.2	Possibilities from the Point of View of the Bridging Type	298
19.5	Conclusion	298
20	The Relationship between Public and Private Recycling of Solid Waste in Fukui Prefecture	303
20.1	Introduction	303
20.1.1	Purpose and Background	303
20.1.2	Terminology	304
20.2	The Collection of Recyclable Materials in Japan	305
20.3	The Collection of Recyclable Materials in Fukui Prefecture	306
20.4	The Collection of Recyclable Materials in Municipalities of Fukui Prefecture	308
20.4.1	Data and Methods of Analyses	308
20.4.2	Results	308
20.4.3	Characteristics of <i>MSW</i> Recycling in 2000	309
20.4.4	Characteristics of <i>MSW</i> Recycling in 2006	311
20.4.5	Comparison between 2000 and 2006	313
20.5	Short Remarks	313

Chapter 8

Environmental Impacts of Ecotourism on Mangrove: Case Study of Kuala Selangor Nature Park

Maisarah ALI and Mohd FAIZ Bin Musa

8.1 Introduction

Mangrove forest is one of the natural settings, which fall under wetland forest category with diverse ecosystem. With its location between the upland and coastal ecosystem, mangrove forest is an ecotone zone; a region of transition between two biological communities with diversity of wildlife habitat and human natural resources. The valuable intrinsic (natural) ecological functions and socio-economic values of mangrove forest make it one of the reasons why mangrove forest has been exploited under the name of development for example aquaculture production, timber or chip wood production, fuel wood production and also tourism development. The success in generating profit from the tourism sector in Malaysia has led to vast development of natural settings for tourism infrastructures. Tourism in Malaysia, especially after 1990, continued to be popular and most of the development still focused on traditional (natural) resorts. WWF Malaysia estimates that Malaysia gains RM655 million per year from ecotourism (Badaruddin, 2002). Currently, ecotourism contributes about 10 per cent of Malaysia's tourism revenue (Vasanth, 2005). According to The National Ecotourism Plan of Malaysia (1997), ecotourism is defined as 'travel and visitation that is environmentally responsible to relatively undisturbed areas in order to enjoy and appreciate nature (including accompanying cultural features: both past and present), promotes conservation, has low impact and provides beneficially active socio-economic involvement of local populations' (MOCAT, 1997). The growth of ecotourism in Malaysia sees mangrove forest as one of its targeted destinations to promote an educational and sustainable tourism to local and foreign visitors. The attraction in developing mangrove as ecotourism destination is because many activities

can be carried out within the mangrove ecosystem. Activities like nature trail, research and education, photography, bird-watching and many more attract numbers of visitors to the mangrove forest. The development of ecotourism facilities and services somehow gives adverse environmental impacts towards mangrove forest directly or indirectly. The introduction of buildings in the estuarine sensitive ecosystem should be approached by zoning the site into public, semi-public and private zones. The zoning approach will ensure that buildings and structures of the resort integrate into the physical and climatic characteristics of the mangrove forest as well as the need of guests experiencing the natural wetland resource (Ismail, 2000). The mangrove cover in Malaysia has declined by 30% over the past five decades: from 800,000ha in the 1950s to 575,000ha now. Mangrove losses are highest in Perlis, Selangor, Johor, Sarawak, Negri Sembilan and Penang (Tan, 2005). Large tracts of mangroves have been cleared for agriculture, aquaculture, infrastructure, industries and housing development. Mangrove land is cheap as the goods and services which they provide are grossly undervalued or do not have market value and often labeled as 'wastelands'. State Governments see no immediate benefit in protecting their mangroves. As a result, mangroves are converted for other uses that generate more revenue.

8.2 Research Goal

The goal of this research is to investigate the environmental impacts on mangrove caused by ecotourism development and its causes and to propose recommendations for designing mangrove forest for ecotourism development that can meet the needs of human without destroying the immediate natural habitats

8.3 Research Objectives

Four objectives have been established in order to achieve the research goal. The objectives include:

- To identify the ecosystem of mangrove forest and their limitation towards development and human intervention.
- To explore the environmental impacts occurring on mangrove due to ecotourism development.
- To identify the causes of the environmental impacts.
- To proposed recommendations for ecotourism development at mangrove forest that meet the needs of human without destroying the nature.

8.4 Research Methodology

Various methods of collecting data have been adopted in this study; Literature review, data from related government bodies such as Forestry Department, Wetland International, data from Kuala Selangor Nature Park management office, field observation at

Kuala Selangor Nature Park and interview management of Kuala Selangor Nature Park and visitors and experiments were carried namely: in-situ measurement (field test) and laboratory tests. Four water quality parameters which include: pH, dissolved oxygen (DO), biological oxygen demand (BOD), chemical oxygen demand (COD) were taken from three different locations were tested.

8.5 Kuala Selangor Nature Park (KSNP)

Located at the estuarine of Sungai Selangor, Kuala Selangor Nature Park (KSNP) comprises of three ecosystems which are the secondary forest (201 hectares), brackish water lake system (1 hectare) and mangrove forest (95 hectares). Kuala Selangor Nature Park was chosen as a case study for this research because KSNP is a popular ecotourism destination on the west coast of Peninsular Malaysia. It becomes a favorite spot for nature lovers, birders and students to do many activities that relate to the environment especially the mangrove forest. The facilities of Kuala Selangor Nature Park were developed within the secondary forest; near the entrance of KSNP to prevent environmental impacts towards the mangrove forest ecosystem. The secondary forest, brackish water lake system and mangrove forest are connected by trails, coastal bund and boardwalk as shown in Figure 8.1.

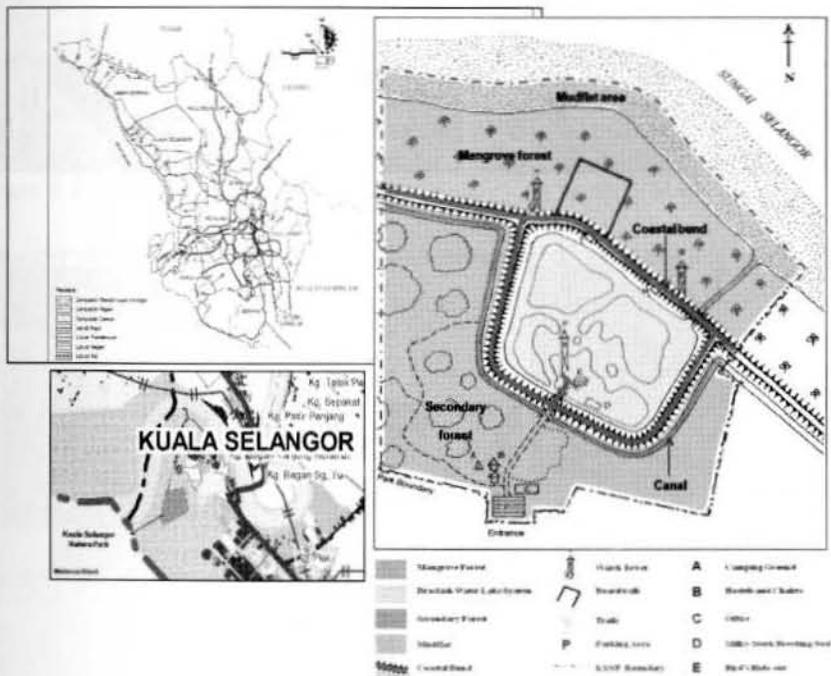


Figure 8.1: Key plan, location plan and master plan of Kuala Selangor Nature Park

8.6 Results and Findings

8.6.1 List of Fauna

168 species of birds were recorded at Kuala Selangor Nature Park (KSNP) as of January 2008, 4 species of birds have not been sighted by the officers of KSNP and tourists; *Turnix suscitator*, *Cisticola juncidis*, *Heliopais personata* and *Tringa stagnatilis* as shown in Figure 8.2. Meanwhile, 1 species of new bird has been sighted; *Bubo sumatranus* as shown in Figure 8.3. For the other species of fauna, the numbers remain the same as with the past checklist. The KSNP management office has established a checklist of fauna in KSNP. The checklists enable the KSNP officers and tourists to record the fauna species, date and total number of fauna they have sighted at the white board provided in the informative centre. This recording system is important for ecotourism operators to record the extinct and new species at their ecotourism site. Further action can be taken for improvement and conservation of ecotourism development because the numbers of species at ecotourism site indicate the successful level of management by the ecotourism operators.

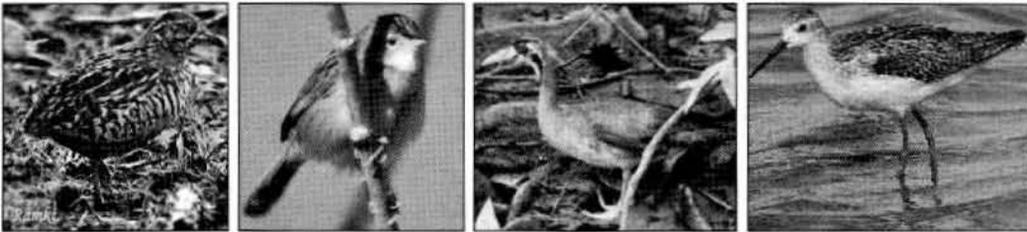


Figure 8.2: From the left; *Turnix suscitator*, *Cisticola juncidis*, *Heliopais personata* and *Tringa stagnatilis* (Google images)



Figure 8.3: *Bubo sumatranus* (Google image)

8.6.2 List of Flora

All the nineteen main species of flora were found at the KSNP because plants of these species are difficult to extinct within their ecosystem.

8.6.3 Inventory and Observation

After carrying out the inventory and observation, two types of environmental impacts were identified. There are positive and negative environmental impacts. Table 8.1 and 8.2 shows the inventory checklists of environmental impacts for both positive and negative environmental impacts and it causes respectively.

Most of the negative environmental impacts occurred in KSNP as shown in Figure 8.4, 8.5, 8.6, 8.7, 8.8 and 8.9 are within the facilities and services areas and along the trails and boardwalk. Two major factors which caused the negative environmental impacts in KSNP are the development of ecotourism facilities and services and the tourists' activities. In development of ecotourism in KSNP, there are also positive environmental impacts that derived from the ecotourism development as shown in Table 8.2 and Figure 8.10, 8.11 and 8.12:



Figure 8.4: Pollution of solid waste



Figure 8.5: Eutrophication



Figure 8.6: Tourist feeding the primates



Figure 8.7: Noise from tourists

8.7 Laboratory Testing

The laboratory testing of water was conducted on 11th February 2008 for 4 hours. Three (3) stations were specified to collect the water samples. The 3 stations are:



Figure 8.8: Illegal cutting



Figure 8.9: Decrease of soil quality



Figure 8.10: Reforestation activities



Figure 8.11: Environmental Education Centre

- Station 1: The canal.
- Station 2: The brackish water lake system.
- Station 3: River (Sungai Selangor).

The laboratory testing of water sample in KSNP that was conducted include the pH, Dissolved Oxygen (DO), conductivity and salinity, Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD). The results of the tests are shown in Table 8.3. The results show that the water quality in Kuala Selangor Nature Park shown a typical reading in terms of the pH, Dissolved Oxygen (DO), conductivity and salinity, Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) for brackish water. Many marine organism and birds can be sighted within Station 3 followed by Station 2 and Station 1. This is because water within Station 3 can sustain more marine organism than Station 2 and 1. The high rate of flow of Sungai Selangor that creates more oxygen and the mangrove trees act as a breeding ground and provide food and shelter for marine organism make Station 3 (mangrove forest) the habitat of marine organisms. This shows that the Kuala Selangor Nature Park management is successfully managed and monitored. The water quality in KSNP can still sustain the wildlife within its niche.

8.8 Conclusions

Mangrove forest is a type of wetland tropical rainforest which has diversity of abiotic and biotic components within the ecosystem. Both the abiotic and biotic components of man-



Figure 8.12: Ecotourism. and informative centre.

grove ecosystem are easy to degrade due to human intervention but hardly recover from any degradation because of its sensitiveness towards any intervention. Abiotic components of mangrove forest such as soil and water are subject to fast reaction towards any chemical and biological reaction that has contacts with them. The condition of mangrove soil such as marine alluvium or muddy condition needs scientific and long-term planning in developing ecotourism facilities and services within it. This is because, when the topsoil of mangrove are ploughed and exposed the acid sulfate in the soil will be oxidized. The water becomes more acidic and thus ferrous salts oxidize to form the ferrous hydroxide. This consequently kills the algae which the fish feed on. This was proven by the acidic soil condition along the metal and concrete boardwalk which affected the plants nearby the boardwalk. Consequently, this will affect the zonation of flora and wildlife species at mangrove forest because the zonation of flora and fauna species in mangrove ecosystem is controlled by the soil condition. Since the pH and salinity of water at mangrove forest is affected by tides and the location either towards the sea or nearby the source of freshwater. Any changes in the pH and salinity will affect the ecosystem of abiotic and biotic components. The changes of abiotic components such as soil and water as mentioned above has great influence towards the number of species of flora and fauna at KSNP. Unfortunately, the effect of degradation in soil and water towards the number of species for flora and fauna cannot be seen clearly in this research owing to time limitation. To study the impacts of abiotic changes towards the ecosystem of flora and fauna need a long-term research and analysis. However, the studies on the impact of noise from the tourists towards the legibility and easiness to spot the fauna were carried out. These were proved when there is high level of noise from tourists especially who moved in a group, fauna is hardly to be spotted. Whereas, when the tourists move quietly, there are numbers of fauna that can be spotted easily. Hence, mangrove ecosystem is really sensitive towards development and changes within the ecosystem since it is a breeding ground for diversity of terrestrial and aquatic wildlife.

8.9 Recommendations

In developing ecotourism within mangrove forest, three stages of planning need to be established each stage requires specific planning. The three stages are initial planning, development phases and management as shown in Table 8.4.

References

- Badaruddin, M. (2002). The development of ecotourism in Malaysia: Is it really sustainable? *International year of ecotourism 2002: Regional conference* Chiang Mai, Thailand.
- MOCAT (1997). *Ecotourism guidelines for Malaysia: National ecotourism plan Malaysia Part 3*, Ministry of Culture, Arts and Tourism, Federal Government of Malaysia.
- Vasanth, G. (2005). *Tourism Malaysia may review strategies*, Business Times.
- Ismail, S. and Muhammad Ali, A. R. (2000). Site planning and architectural design consideration of resorts in Mangrove forests, *Proceeding CASLE 2000: Expanding relevance enhancing possibilities in a knowledge-based economy*, June 21-21, Kuala Lumpur, Malaysia.
- Tan Cheng Li (2005). Mangroves in need of protection, *The star newspaper*, Malaysia, October 18.

Table 8.1: Negative environmental impacts and the causes within KSNP

No.	Negative Environmental Impacts	Causes
1.	<p>Pollution:</p> <p>i. Solid waste (Litter).</p> <p>ii. Eutrophication in pond and drainage.</p>	<p>i. Tourists feed the monkeys and leave the rubbish without throwing it into the provided dustbin.</p> <p>ii. Solid waste and domestic waste from monkeys and irrigation dung in the drainage which eventually lead to eutrophication.</p>
2.	<p>Fauna degradation:</p> <p>i. Decrease number of primates population.</p> <p>ii. Decrease number of invertebrates and fish.</p> <p>iii. Less sighted fauna during ecotourism.</p>	<p>i. Silvered Leaf Monkey and Long-tailed Macaque migrate from KSNP to Bukit Melawati because of food-feeding from tourists.</p> <p>ii. Illegal fishing by the local people.</p> <p>iii. Noise from tourists and vehicles.</p>
3.	<p>Flora degradation:</p> <p>i. Trampling of plants along the trails.</p> <p>ii. Loss of trees along the constructed boardwalk</p> <p>iii. Decrease number of mangrove trees.</p>	<p>i. Tourists pick or collect some plants during ecotourism.</p> <p>ii. Clearance of trees along the constructed boardwalk during the construction. Moreover, chemical reaction of acid sulfate in the soil occurs when the mangrove soil is ploughed.</p> <p>iii. Illegal cutting of mangrove trees by the local people.</p>
4.	Increased of land use for tourism facilities resulting from unsustainable development plan.	Increase numbers of tourists especially group of tourists.
5.	Vandalism or graffiti on plant.	Lack of self-awareness among the tourists.
6.	Soil erosion along walked trails.	Caused by monitor lizard and smooth otter which pass by the trails.
7.	Decrease of water quality in brackish water lake system.	Problem with sluice gate that not well functioned in controlling inlet and outlet of water from Sungai Selangor.
8.	Decrease of soil quality along the constructed boardwalk.	The rust metal and concrete along the boardwalk contaminate the soil which makes the soil become acid sulfate.

Table 8.1: Negative environmental impacts and the causes within KSNP

No.	Negative Environmental Impacts	Causes
1.	<p>Pollution:</p> <p>i. Solid waste (Litter).</p> <p>ii. Eutrophication in pond and drainage.</p>	<p>i. Tourists feed the monkeys and leave the rubbish without throwing it into the provided dustbin.</p> <p>ii. Solid waste and domestic waste from monkeys and irrigation dung in the drainage which eventually lead to eutrophication.</p>
2.	<p>Fauna degradation:</p> <p>i. Decrease number of primates population.</p> <p>ii. Decrease number of invertebrates and fish.</p> <p>iii. Less sighted fauna during ecotourism.</p>	<p>i. Silvered Leaf Monkey and Long-tailed Macaque migrate from KSNP to Bukit Melawati because of food-feeding from tourists.</p> <p>ii. Illegal fishing by the local people.</p> <p>iii. Noise from tourists and vehicles.</p>
3.	<p>Flora degradation:</p> <p>i. Trampling of plants along the trails.</p> <p>ii. Loss of trees along the constructed boardwalk</p> <p>iii. Decrease number of mangrove trees.</p>	<p>i. Tourists pick or collect some plants during ecotourism.</p> <p>ii. Clearance of trees along the constructed boardwalk during the construction. Moreover, chemical reaction of acid sulfate in the soil occurs when the mangrove soil is ploughed.</p> <p>iii. Illegal cutting of mangrove trees by the local people.</p>
4.	Increased of land use for tourism facilities resulting from unsustainable development plan.	Increase numbers of tourists especially group of tourists.
5.	Vandalism or graffiti on plant.	Lack of self-awareness among the tourists.
6.	Soil erosion along walked trails.	Caused by monitor lizard and smooth otter which pass by the trails.
7.	Decrease of water quality in brackish water lake system.	Problem with sluice gate that not well functioned in controlling inlet and outlet of water from Sungai Selangor.
8.	Decrease of soil quality along the constructed boardwalk.	The rust metal and concrete along the boardwalk contaminate the soil which makes the soil become acid sulfate.

Table 8.2: Positive environmental impacts and the factors in KSNP

No.	Positive Environmental Impacts	Factors
1.	Educate tourists towards conservation programme.	Through Environmental-Educational Programme and reforestation of mangrove sampling which was organized by KSNP management during ecotourism programme and partnership with institutions, organizations and societies.
2.	Increase of public awareness in protecting the mangrove ecosystem.	Through ecotourism activities and informative center of KSNP where information and issue are disseminated.
3.	Expansion of conservation area of mangrove forest.	Through the expansion of ecotourism development of KSNP "Taman Wilayah Warisan Alam" as planned in Local Development Draft of Kuala Selangor District Council 2015.

Table 8.3: Laboratory test results of water from KSNP

No.	Laboratory Test	Station 1	Station 2	Station 3
1.	pH of water	6.96pH	6.97pH	6.95pH
2.	Dissolved Oxygen(DO)	0.76ppm	2.01ppm	2.31ppm
3.	Conductivity	32ms/cm	51.1ms/cm	52.0ms/cm
4.	Salinity	18.4ppt	30.9ppt	31.0ppt
5.	Biological Oxygen Demand(BOD)	2.85mg/l	1.44mg/l	1.74mg/l

Table 8.4: Three stages of planning ecotourism development within mangrove forest

1.Initial Planning	2.Development Phases	3.Management
1.Inventory and analysis of Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) need to be carried out thoroughly.	1.Local people involvement during construction of facilities can reduce the construction cost.	1.Local people involvement in managing ecotourism operation.
2.Specified experts in mangrove are required; botanist, environmental engineer and landscape architect in initial stage of planning.	2.Construction of trails and boardwalk should follow the alignment of trees.	2.Rules and regulations of ecotourism development within mangrove forest need to be reviewed according to the current issues and situations.
3.Local people involvement as they are the end users who later will experience the impacts of the ecotourism.	3.Avoid the usage of heavy machine because it will cause high rate of damage to plants and soil.	3. Marketing and promotion of ecotourism destination should be carried out at local, national and international level.
4.Classification of zonation areas for development and conservation.	4.Construction material should tolerant to salty and acidic condition of Mangrove; timber.	4.Interactive activities based on nature education and awareness of conservation should be carried out.
5.The location of facilities must be developed within the entrance area and buffer of 400m minimum from sea edges must be developed.	5.The height of boardwalk platform should be higher than the annual maximum level of high tide.	5.Informative signage along the trails and boardwalk.
6.Suitable landscape plants; native and tropical species.		6.Carrying capacity of tourists in one time should be enforced.
		7.Rules and regulations towards trespassers and tourists should be enforced.