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SOCIAL CAPITAL, ECO-GOVERNANCE, AND NATURAL RESOURCE MANAGEMENT: A CASE STUDY IN BUKIDNON, PHILIPPINES

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Social Capital, Eco-Governance, and Natural Resource Management: A Case Study in Bukidnon, Philippines

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ABSTRACT

Using household and community data in Bukidnon, Philippines, this paper investigates whether variations in economic conditions of communities affect the level of social capital and whether the quality of environmental governance and levels of social capital influence management of natural resources. Social capital is a measure of sociability of people. Good environmental governance or (eco-governance) exists when local leaders are responsive to calls for planning and implementing programs and projects to protect the natural resources. Results showed that social capital index was higher in communities with higher level of economic development. Social capital index was also found to be higher in areas where soil productivity was perceived to be better. The relationship between social capital and eco-governance was likewise found to be positive. In areas with good eco-governance, people were found to have a higher propensity to collectively participate in the management of natural resources.

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Social Capital, Eco-governance, and Natural Resource Management: A Study of Communities with Varying Levels of Economic Development in Bukidnon, Philippines[1]

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I. Introduction

The extent and rate of natural resource degradation in the Philippines has reached an alarming proportion. Forest cover has continuously declined at an increasing rate. Such occurrence, which reportedly began in the 1960s, has been observed in Mt. Kitanglad, Bukidnon. This led to initiatives to protect and conserve the forest and its environs. One such activity was the Bukidnon Watershed Summit in 1999. Participants in this forum have recognized the urgency to manage their natural resources. Factors such as urbanization and land use changes in response to economic policies have contributed to the environmental degradation in Bukidnon (Coxhead et al., 2001, Midmore et al., 2001). But environmental degradation can be arrested through local community action and policies that encourage active participation of civil society. Local collective efforts to improve the management of natural resources have been observed in India (Sakurai et al. 2001), Nepal (Sakurai et al., 2001), the Philippines (Katon et al 2001), and Japan (Kijima et al., 2000).

Collective action is one expression of what is now commonly known as social capital. Social capital means the degree of connectedness of people, within families, among friends, neighbors, and associations/organizations (both internal and external to the community). It is the social network or social fabric that bind individuals. This could facilitate coordination and cooperative action to protect the natural resources such as water and soil. However, the degree or strength of social capital is influenced by a number of factors, which include increasing population, commercialization, and industrialization.

In essence, the level of economic development prevailing in the community could affect social capital. Communities with low levels of economic development are said to be closer in terms of relations and networks. On the other hand, greater anonymity and impersonal relations characterize communities with higher economic development.

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Another factor that could influence the degree of social capital in a community as this relates to natural resource management is environmental governance. One of the reasons for the transfer of rights and responsibilities to the local people is that they live and work in the area and they therefore, have an edge over government agents in monitoring the use of resources and compliance with the rules (Katon, 2001). This, however, could only be realized if policies and programs of the local/barangay executives allow, even encourage it. In other words, good governance at the local level is necessary to ensure active participation of the people in managing their natural resources.

Good governance means that the views of the people are taken into account in the decisionmaking process. Specifically for this study, good environmental governance (or eco-governance) is assumed to mean that the voices of the people are heard during planning for the management of natural resources and that the local leaders actively implement programs and projects for the protection of water and soil resources.

This study attempts to answer the following questions. Would variations in economic conditions of communities affect their level of social capital? Would a higher index of social capital contribute to the conservation and protection of the environment? And, would the quality of the local political environment influence better management of natural resources?

The remainder of the report is structured as follows. The next section reviews the literature on the conceptual framework and empirical studies promoting the development and measurement of indicators on social capital and its attributes, good governance, and economic development as they relate to the quality of natural resources to come up with a framework of analysis. The indicators and measurement of economic development, social capital, good governance, and quality of natural resources, in particular the soil resources, are developed in Section 3. Section 4 characterizes the study site and presents the results of the analysis relating economic development, social capital, eco-governance, and quality of natural resources. The conclusion and areas for further research are discussed in Section 5.

II. Framework of Analysis

II.1 Social Capital

The concept of social capital, whose origins are embedded in classical sociological work achieved novelty and heuristic power because it a) focuses on the positive consequences of sociability and, b) in a broader discussion of capital, highlights the fact that nonmonetary forms can also be sources of power and influence (Bautista, 2001).

The theoretical development of social capital is still being debated and discussions are well covered in the literature (see, for instance, Thomas Ford Brown's Theoretical Perspectives on Social Capital, [Brown nd]). Understandably, the empirical

applications may not easily follow this development because of the "theoretical vagueness and disarticulation that have plagued social capital scholarship" (Brown, nd).

However, there is a growing consensus in the literature that social capital refers to connections among individuals --- social networks and norms of reciprocity and trustworthiness that arise from them (Putnam, 2000). Allen et al., (2001) interpret Putnam's definition of social capital as the interaction that enables people to build communities, to commit themselves to each other, and knit the social fabric. Working together through collaborative partnerships is a powerful way to improve communities and environment. These are alliances that can be used to improve the environmental, social, and economic condition of the community. They encourage people, neighborhoods, communities, and organizations to work together and make a difference.

Writing on women minorities and employment discrimination, Loury (1977) used the concept of social capital as a set of social resources within a household or a community, which serves as important assets in the development of human capital. Incorporating social capital within a general theory of social action, Coleman (1990) defined it as a production collection of structural resources, embedded in social relations, which facilitate the achievement of certain ends that would have not been attainable in its absence. Forms of social capital include norms, obligations, information potential, and voluntary associations that promote trust and cooperation.

Social capital can be defined from the narrowest to the most comprehensive point of view (WB, 2002). Some studies equate social capital with membership to associations/organizations, while others compute an index based on a set of variables to represent social capital. Sakurai (2002), Paunlagui and Rola (2001), Rola and Paunlagui (2002), and Pennings, and Leuthold (2000) view that not directly observable variables but rather latent variables should be considered in measuring social capital. Examples of latent variables are density of organizations and density of household participation, rules, regulations, activities, and effective participation by members in activities and at meetings. Dasgupta and Serageldin (2001) consider trust as one of the key concepts of social capital.

Social capital may facilitate reciprocal insurance arrangements, thereby decreasing household or individual risk, or it may be used to facilitate access to credit or information leading to increased productivity and better marketing opportunities (Haddad and Maluccio, nd; Narayan and Pritchett, 1997).

II.2 Application of Social Capital in Natural Resource Management

Results of empirical studies evaluating the impact of social capital and its various forms on the management of natural resources vary. An explanation is the inconsistent terminology and measurements used. Nonetheless, a review of empirical studies is presented below.

Civic environmentalism, according to Sirianni and Friedland (1995), is one of the many forms of social capital. Civic environmental projects are developed at the local, state, and even national levels in response to the deficiencies of government agencies in responding to environmental problems. For instance, the Local Leagues of Women Voters have developed community education programs on groundwater pollution to enhance awareness among the general public and within key civic, political, and business institutions. Likewise, national trade associations in printing and dry cleaning used their networks to generate voluntary development, testing, and diffusion of alternative production techniques to reduce toxics (Sirianni and Friedland, 1995).

The effects of a weakening social capital in managing natural resources can be quite dramatic (Anderson, 1998). The once closely united four villages in India became divergent when they had a series of conflicts about the siting of a road, the sharing of benefits from a jointly managed pond, and conduct of local elections (Conroy et al., 1997 as cited in Anderson, 1998). Originally, these problems were not related to forest management but, eventually, because of differences, led to the cutting down of forest trees that they have jointly protected.

A number of studies found a positive relationship between collective action and forest resource management. In a study of 18 sites in Nepal's middle hills (Varughese, 1999 as cited in Poteete and Ostrom, 2002), an index of collective action was constructed. It was based on the presence of collective rules constraining access to and harvest from the forest, organization of group activities related to forest management, and monitoring of activities by group members. They noted that, overall, forest conditions were highly correlated with levels of collective action. But when only the presence of group activities was considered, the effect was moderate. In another study of 12 sites in India, Chakrabarti (2001 as cited in Poteete and Ostrom, 2002) found positive correlations between forest conditions and levels of collective action.

Gebremedhin et al. (as cited in Collective Action and Property Rights, 2002) investigated collective action in grazing management in Ethiopia. Using a combination of quantitative and qualitative methods, the study found that collective action for grazing land management is widespread and that it contributed to sustainable use of the resource. Most collective action was locally initiated and organized at the village level. Community experience with local organization favored collective action.

The role of social capital in the protection of natural resources was also evident in some parts of the Philippines. For instance, the strong internal social capital of the association formed by the Batak and Tagbanua tribal communities in Palawan earned the support of the local government. They had obtained land tenure and financial support to delineate and map the boundaries of the ancestral domain. Another endeavor facilitated by strong social capital was in the Cordillera, where the village elders launched a collective action to successfully block government plans to construct a huge hydroelectric dam along the Chico River (Magno, 2003).

In another study, traditional sources of social capital may be eroded due to changes in the political economy (Magno, 2003). In Loo Valley, Benguet, the local people's rising dependence on chemical fertilizers contributed to the demise of the traditional system of resource allocation and social relations. In the same manner, Shields et al. (as cited in Rola and Paunlagui, 2002) noted that the penetration of various forms of capitalism in the subsistence economies of the three villages in the Visayas gave rise to major changes in the control and management of resources, which have affected men's and women's ability to build systems of social exchange.

In San Salvador, Zambales, the collective action of the local fishermen, an NGO group, and the local government units at the village and municipal levels led to the establishment of a marine sanctuary and marine reserve (Katon et al., 2001). This action has resulted in a remarkable improvement of coral reef conditions and an increase in catch per fishing trip. Similar efforts of putting up marine sanctuaries were noted in villages along Saranggani Bay, South Cotabato, achieving similar results (Elazegui and Paunlagui, 1998).

II.3 Environmental Governance

Political environment shapes social interaction and gives room for development (WB, 2002). Government action is one of the identified factors that facilitate/constrain collective action (Poteete and Astrom, 2002). This view extends the importance of social capital to the most formalized institutional relationships and structures such as government and the capacity of various social groups to act in their interest depends crucially on the support (or lack thereof) that they receive from the state as well as from the private sector (WB, 2002).

What used to be the role of central government in the management of natural resources is being devolved to the local government units in the process of decentralization. Decentralized governance is expected to be one of the key ingredients in sound environmental management (DAI, nd). It provides local governments increasing responsibility to provide clean water, manage waste, control pollution, and promote sustainable and equitable use of forestry. In pursuing these responsibilities, the collaboration and participation of public and private sectors in a broad range of eco-governance initiatives are necessary. Eco-governance initiatives incorporate strong poverty alleviation measures that expand access to water and other basic services and help rural communities identify sustainable livelihoods (DAI, nd).

Governance refers to the process of decisionmaking and the process by which decisions are implemented (or not implemented). Many others (e.g., Paderanga, 1996, Root, 1995; Osborne and Gaebler, 1992; Landell-Mills and Serageldin, 1992 as cited in Ramachandran and Ang, nd) came up with different definitions of governance. Essentially, these definitions put emphasis on 1) "power", 2) process, 3) trisectoral participation, and 4) institutional arrangements (Ramachandran and Ang, nd).

Good governance ensures that the views of the minorities are taken into account and that the voices of the most vulnerable in society are heard in decisionmaking (UNESCAP, nd). Thus, building strong constituencies for improved environmental management is one of the key entry points in environmental governance (DAI, nd). Stakeholders, including local users, are empowered to manage local irrigation, fisheries, and forestry resources collectively.

A number of proposals came up to measure good governance. An example is the Indicators of Good Governance and Local Development Project (or simply the Governance Project) that developed a set of simple indicators of good local governance, the GOFRDEV Index (PCPS, 2002). This index is composed of 10 indicators to measure people's evaluation of the performance of their local government, local government's actual performance, and people's active participation in local planning bodies. Likewise, Manasan et al. (1998) developed a governance quality index (GQI). The composite index is a combination of a set of indicators, which measures the revenue generation and utilization capacity of local government officials, the adequacy of social services provided, and accountability.

This study took into account the above indicators in measuring good governance but, because of limited data, only one indicator was used. This is attendance of people during the past five years in barangay meetings organized by barangay officials.

II.4 Conceptual Framework

The attributes of social capital, which are assumed to vary depending on the level of economic development prevailing in the community, are presented in Figure 1. In this study, social capital means networking (membership in organizations); reciprocity (exchange of goods, labor, and other forms of assistance in agricultural, social, religious, and economic activities); participation in collective action to represent the horizontal association; and level of trust (alliances and relations between pairs of organizations/institutions) to represent vertical associations. The methodology for measuring social capital index is a modified version of an earlier work (Rola and Paunlagui, 2002). Their earlier index included the characteristics of the organizations in the computation of social capital index. Furthermore, reciprocity focused only on exchange labor in agricultural production.

Figure 1 also shows that the quality of natural resources (represented by soils) is affected by the level of social capital, which, in turn, also depends on the level of economic development of the community.

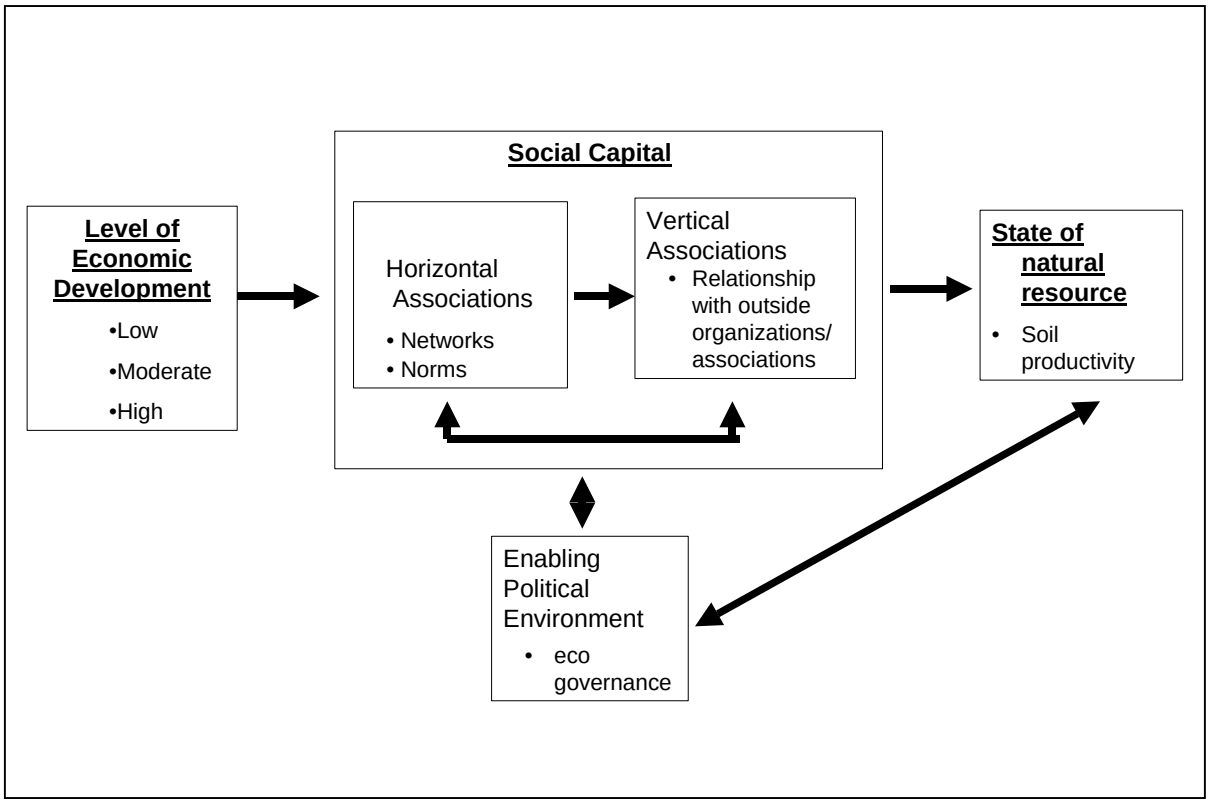

Fig. 1. Conceptual framework that shows the attributes of social capital.

Institutions, including the government, influence capacity for social capital to develop. Environmental governance promotes decentralization, fosters growth of organizations, and strengthens their capacity to participate in defining and implementing development policies. These enabling actions improve opportunities and diversify and sustain their livelihoods (FAO, nd). Putnam (1993) concluded that considerable evidence links the type and effectiveness of a country's public sector to society's level of social cohesion. Thus, the community's political environment can make it easier for social capital to flourish or fade at the community level.

In summary, a number of attributes contribute to social capital and good governance. This, in turn, encourages people to work together to protect and conserve the environment in general and soil quality in particular.

III. Methodology

III.1 Empirical Model and Measurement of Variables

Based on the conceptual framework of this study, the model of level of economic development and social capital can be expressed in the following manner.

Level of economic development = f (annual income, number of commercial establishments)

Where annual income = total income of the barangay;
commercial establishment=total number of commercial establishments (e.g., sari-sari stores, eateries, beauty parlors) present in the community.

Social capital = f (membership in organizations, reciprocity, collective/community participation, and level of trust)

where membership = the number of organizations that members of household is affiliated with;

Reciprocity = the exchange of goods, services, and other forms of assistance in agricultural, social, religious, and economic activities. This was measured by asking the study respondents on the frequency of participation in the said activities.

Collective/community participation = involvement of respondents in group activities such as patrolling the forest for fires, illegal loggers and poachers; cleaning and planting trees in the area surrounding the barangay plaza, and repair of water system. Also included is contribution of funds instead of providing free labor.

Level of trust is measured through the use of a relational matrix showing the levels of trust or conflict that exist between a pair of institutional groups in the matrix. This is recorded by filling the template in the Focus Group Discussion Guide (Annex A).

Good governance = attendance in meetings organized by barangay officials during the past year.

Quality of natural resources = soil quality

where soil quality is measured based on the perceptions on whether crop productivity has been declining or increasing during the past 5 years.

For social capital, an index was computed by taking the averages of scores of membership, reciprocity, collective/community participation, and level of trust. To determine the robustness of the computed index of social capital, two alternative indices of social capital were presented. The first alternative index was a combination of reciprocity and collective/community participation only, while the second index was based on collective/community participation only.

The details related to measurement of indicators are listed in Table 1.

III.2 Sources of Data

This study used data from two sources: a household survey of 109 respondents and focus group discussions (FGDs), one from each of the eight barangays included in the study of Rola et al. (2003) (**Table 1**). These households have farm records since 1994. For the 2002 survey, questions on community relations, governance, and soil quality were added. Specifically, the data taken from the household survey included membership in associations, sources and recipients of assistance, collective/community participation, indicators of good governance, and quality of soil resources.

Table 1. Measurement of variables, Lantapan study, 2003.

	Question/Source of information	Measurement/ Response		
Social Capital				
Associations/ Organizations	Membership in association	Low (0) Moderate (1-2) High (3+)	= = =	1 2 3
Reciprocity	Free exchange of goods and services, participation in exchange labor	Never Sometimes Always	= = =	1 2 3
Community/ collective participation	Number of times they participated in community projects/activities	Never Sometimes Always	= = =	1 2 3
Level of trust	Alliance between a pair of organizations	Low Moderate High	= = =	1 2 3
Environmental governance	Attendance in barangay meetings organized by local officials	Sometimes Always	= =	1 2
Quality of natural resources				
Soil quality	Productivity	Declining Increasing	= =	0 1
Level of economic development				
	Barangay annual income	Low (less than ₱450,000) Moderate (₱ 451,000-470,000) High (₱471,000 +)	= = =	1 2 3

	Number of commercial establishments	Low (less than 10) Moderate (10-17) High (18 and above)	= = =	1 2 3

To obtain qualitative data, FGDs were conducted in each barangay. Representatives of organizations present in the community and officers of the barangay were invited. Questions similar to those contained in the household survey instruments were asked to provide depth in the analysis of social capital, governance, and quality of natural resources. The level of trust was the only community variable taken from the results of the FGD. It was generated by asking the participants in the FGDs as to how they trust one another. A relational matrix was used; responses varied from 0 (low level of trust) to 3 (high level of trust) (**Annex A**).

Additional secondary data relating to the socioeconomic characteristics of the barangays came from the barangay development plan and reports from the municipal planning, civil registrar, accounting and auditor offices of the Municipality of Lantapan.

The use of quantitative and qualitative data addresses the shortcomings of using only one type of data. CAPRi (2002) states that, in general, qualitative analysis helps deepen the understanding of specific issues whereas quantitative analysis is used to generalize findings. Quantitative analysis is criticized for being overly reductionist and for tending to avoid complexity. Meanwhile, qualitative analysis on a subset of the sample can help before (as in the design stage) as well as after the quantitative survey to interpret the data.

Table 2. Number of respondents by level of economic development, Lantapan: 2003.

Level of economic development	No of respondents
Low	
Cawayan	11
Victory	7
Moderate	
Baclayon	9
Basac	9
Songco	14
High	
Alanib	18
Balila	14
Kibanggay	27

Source: Rola et al. (2003).

IV. Research Findings

IV.1 The Eight Villages of Lantapan

In 2000, Kibanggay had the highest population (6,006), followed by Alanib (3,864) and Songco (2,921). The combined population of these three barangays represented 59% of the eight barangays included in the study (**Table 3**). The same barangays had the largest land area, covering 65% of the villages included in the study.

Although there were slight variations in the predominant livelihood activities, all barangays were primarily agricultural, with majority of the population dependent on

farming for their livelihood. Variations were noted in the kind of crops planted and whether people engaged in plantation and nonplantation agriculture. Barangays located in low elevations (e.g. Balila and Baclayon) had corn and sugarcane as major crops, while Alanib was dominated by banana plantations. Sugarcane was believed to eventually predominate in many barangays, as incentives were given to plant such a crop.

The Mt. Kitanglad Agri-Ventures, Inc. first introduced plantation agriculture in Alanib, where more than 600 ha are planted to banana. Dole Philippines followed by leasing 200 ha of land for banana plantation in Cawayan in 2000, while negotiations were under way in Baclayon.

Potato and other vegetables such as cauliflower, cabbage, carrots, string beans, and tomato were concentrated in high-altitude (more than 1000 m barangays above sea level) like Songco, Victory, Basac, and Kibanggay.

The kinds of crops planted and the shifts in agricultural production had implications on the quality of water and soil resources of the villages under study. For instance, the introduction of banana plantations meant more competition for water and greater use of chemicals. Meanwhile, the increasing popularity of sugarcane also meant farm mechanization, particularly in land preparation. All these developments could have an effect on social capital and soil quality.

Table 3. Profile of barangays included in the study, Lantapan.

Barangay	Population (2000)	Area (has)	Presence of		Proportion of Talaandig to total Barangay Population (2001)
			Monthly religious service (2002)	Health facilities and weekly service (2001)	
Low					
Cawayan	1,686	1,452	0	0	60
Victory	1,367	1,123	0	0	80
Moderate					
Baclayon	1,439	727	0	1	60
Basac	2,257	3,705	0	1	95
Songco	2,921	4,304	0	1	70
High					
Alanib	3,864	4,812	1	1	15
Balila	2,306	536	0	0	5
Kibanggay	6,006	5,090	1	1	25

[A] *1=present; 0=absent Source: Municipal Development Reports.*

The Talaandigs, one of the indigenous peoples of Bukidnon, dominated the villages of Basac, Victory, and Songco. Other ethnic groups included the Higaoonons, the Boholanos and the Ifugaos.

Table 4 presents two economic indicators used in classifying the communities into those with low, moderate, or high level of economic development. Alanib had the highest number of commercial establishments, followed by Balila and Kibanggay. Songco, Baclayon, and Basac, which had the same number of commercial establishments, had moderate level of economic development.

Table 4.Economic profile of barangays included in the study, Lantapan, 2001.

Barangay	No. of commercial establish-ments	Annual income (pesos)
Low		
Cawayan	3	420,668
Victory	4	430,188
Moderate		
Baclayon	16	469,574
Basac	16	521,651
Songco	16	644,897
High		
Alanib	38	844,220
Balila	24	613,063
Kibanggay	18	948,229

Source: Municipal Development Reports (2001).

IV.2 Social Capital Index

The aggregate index of social capital was highest in the community characterized by a high level of economic development (**Table 5**). This pattern was similar to the community-level data on social capital gathered during the FGDs (data not shown). This pattern contradicts the conventional wisdom that social capital is higher among households with low level of economic development compared with those having a high level. These results may, however, be expected of upland communities, especially in areas where several tribes coexist. Economically, laggard communities could have low social capital, as people are mostly financially and socially constrained to attain the level of indicators as defined by the social capital index. When compared with results of the same in the lowland communities as reported in Rola and Paunlagui (2002), this result reveals the weakness of the specification of this index as applied to upland communities.

Table 5. Social capital index, by level of economic development, Lantapan, 2003.

Level of economic development	Social capital index[a]
Low	**1.73**
Cawayan	1.72
Victory	1.73
Moderate	**2.08**
Baclayon	2.22
Basac	2.06
Songco	1.96
High	**2.16**
Alanib	2.06
Balila	2.42
Kibanggay	2.00

[a] *1 – Low; 2 – Moderate; 3 – High*
Source: Rola et al. (2003).

The attribution of higher membership in associations/organizations, exchange of goods and services, level of trust, and higher community participation to higher income. Barangays Cawayan and Victory, which had the lowest annual income, registered the

lowest social capital index. However, this relationship did not hold true for Balila, which had lower annual income than Alanib and Kibanggay but had the highest level of social capital. Balila also had the smallest population of Talaandigs. Thus, the community comprised mostly migrants. Another interesting case is Baclayon, which had the lowest income among the barangays with moderate level of economic development. It registered the highest level of social capital and the lowest proportion of Talaandigs in the said category. Geographically, Baclayon and Balila were closest to the poblacion.

To determine the robustness of the social capital index, alternative means of constructing it are presented in **Table 6**. The different indices exhibited similar patterns, except for the index of reciprocity and collective participation for low and moderate level of economic development. The community with a high level of economic development exhibited the highest level of social capital, regardless of the index used.

Table 6. Alternative measures of social capital by, level of economic development, Lantapan, 2003.

Index	Level of economic development		
	Low	Moderate	High
Social capital [a]	1.73	2.09	2.16
Reciprocity and collective participation only	1.69	1.61	1.96
collective participation only	1.27	1.95	2.10

[a] *1 – low, 2 – moderate, 3- high. Source: Rola et al. (2003).*

IV.2.1. Membership in organizations/associations

Membership in organizations was lower in the community with a low level of economic development. Around half of the households in this category (compared with about three-fourths from moderately and highly developed communities) were members of organizations (**Table 7**). The FGD results showed that some households in the community with a low level of economic development did not join any organization because of bad experience. Their cooperative was functioning well at the beginning; it eventually failed because of mismanagement. Their money disappeared and the cooperative building was left unfinished.

Table 7. Membership in organization (%) by, level of economic development, Lantapan, 2003.

Membership in organization	Level of economic development		
	Low	Moderate	High
No	44	22	25
Yes	56	76	75
Total	100	100	100
Number of organizations	18	23	59

Source: Rola et al. (2003).

The FGD data also showed that associations/organizations in both types of community fall into three major groups: environmental, economic, and social (**Table 8**). The environmental group is made up of associations assisted by government agencies and nongovernment organizations. Groups formed in the pursuit of their livelihood activities, such as farmers, irrigators, cooperatives, and tricycle/operator associations, are under the

economic type of associations. Meanwhile, senior citizen, youth organization, parent, teacher, and sports groups comprise the social organizations. Other associations are not directly related to environmental protection but do contribute to such objective by providing training or support to pursue their livelihood activities, thus lessening the dependence of the people on the forest for their existence.

Table 8. Type of organization (%), by level of economic development, Lantapan, 2003.

Type of organization	Level of economic development		
	Low	Moderate	High
Economic	35	36	22
Social	41	42	50
Environmental	24	16	22
Others	0	6	6
Total	100	100	100
n	17	31	18

Organizations with social orientations were the most popular (**Table 8**). There are two explanations for this. One, every household with a child attending a public elementary school is a member of the Parent-Teacher-Child Association. Two, the passage of Republic Act 7876 provided senior citizens incentives to organize for purposes ranging from raising funds to pursuing recreational activities.

The FGD also indicated a lower proportion of environment-related organizations compared with economic and social types in all communities (**Table 8**). This reflects the existing situation where outside institutions initiate the formation of organizations for the protection and conservation of natural resources. Examples of environmental organizations are the Tigbantay Wahig, Land Care, Agroforestry Tree Seed Association of Latantapan (ATSAL), and Bantay Gubat or Kitanglad Guard Volunteers (KGV). The first three organizations received funding support from SANREM. Tigbantay Wahig (Water Watchers), the people's organization composed of citizen volunteers who monitor water quality, aims to protect and restore the quality of water in Lantapan (Deutsch et al., 2001). The International Centre for Research and Agforestry (ICRAF) implements the Land Care Project. The core of the Land Care model is effective local community groups and partnership with government in the development and dissemination of agroforestry technology (Garrity et al., 2001). ATSAL is an association of tree seed collectors/producers who were trained

Table 9. Index of membership in associations/ organizations, by level of economic development, Lantapan, 2003.

Level of economic development	Index of Membership [a]
Low	**1.11**
Cawayan	1.36
Victory	0.86
Moderate	**2.14**
Baclayon	1.56
Basac	2.22
Songco	2.64
High	**1.99**
Alanib	1.67
Balila	2.36
Kibanggay	1.93

[a] *1 – low , 2 – moderate, 3- high. Source: Rola et al. (2003).*

by ICRAF on all aspects---from seed selection and processing to nursery and plantation establishment and management. The KGV, formed under the sponsorship of the Kitanglad Integrated NGOs, is responsible for patrolling the forest for illegal loggers, poachers, and fires.

Additional information from the FGDs indicated that organizations in both types of community were open to all and that there was much overlap in membership. Except for the ethnicity-related groups, members of the community were free to join an organization. To a certain extent, the overlap suggested that membership in organizations was confined to a limited number of the population. It was not that others are refrained from joining, but that people had a wait-and-see attitude. Others, who have been members of organizations were already aware of the benefits of joining an organization and thus were encouraged more to join other organizations. For instance, a member of the Land Care group was also most likely a member of another environmental group.

Membership was lowest in the community with a low level of economic development **(Table 9**). The low membership in Victory was due to their bad experience while that in Cawayan, was related to ethnicity issues. The most popular organization in the community was a cooperative put up by a migrant group, which was exclusive to them. (The issue on ethnicity is discussed further in Section IV.2.4.)

Table 10. Index of reciprocity, by level of economic development, Lantapan, 2003.

Level of economic development	Index of Reciprocity [a]
Low	**1.69**
Cawayan	2.09
Victory	1.29
Moderate	**1.62**
Baclayon	1.56
Basac	2.00
Songco	1.29
High	**1.96**
Alanib	1.78
Balila	2.36
Kibanggay	1.74

[a] *1 – low, 2 – moderate, 3 - high. Source: Rola et al. (2003).*

Songco registered the highest index of membership. Songco, next to Basac, had the highest number of organizations/associations present in the community. On the other hand, the low level of index of membership in Baclayon and Alanib could be attributed to the existence of only a few organizations in the community.

An interesting case is Balila, which reported only four associations. Yet its index of membership was highest among the barangays classified under a high level of economic development. One possible explanation is the presence of an association formed by a government agency, which gave livelihood assistance to most households.

IV.2.2 Reciprocity

Reciprocity or mutual exchange of goods and services is seen to generate additional resources for families and networks. Thus, it was not surprising that nearly

all the respondents in both types of community freely gave and received items and services. Their most common partners in the exchange were neighbors and relatives. Others who were mentioned were traders, landowners, and government officials.

The survey data showed that households from communities with high level of economic development gave and received more than their counterpart from the communities with low and moderate levels of economic development (**Table 10**). The respondents claimed that the exchange of goods (e.g., rice, vegetables, salt) and services has been practiced for a long time and has remained the same, with or without an economic boom or crisis. In one FGD, it was reported that more people participated in reciprocal activities now than before. The giving of goods and services occurred regularly but larger sums of money and goods were given during weddings, birthdays, and baptisms. There was the customary practice where relatives, in-laws, and friends returned the favor during occasions.

Table 11. Collective participation, by level of economic development, Lantapan, 2003.

Level of economic development	Collective participation [a]
Low	**1.28**
Cawayan	1.55
Victory	1.00
Moderate	**1.96**
Baclayon	2.22
Basac	1.78
Songco	1.86
High	**2.10**
Alanib	2.00
Balila	2.50
Kibanggay	1.81

[a] *1 – low, 2 –moderate, 3 – high.*
Source Rola et al. (2003).

Qualitative data from the FGDs revealed a declining pattern of exchange labor in farming activities such as weeding and land preparation. This trend was found in almost all 12 communities included in the study of Paunlagui and Rola (2001). This occurred because of increasing mechanization of agriculture, increasing population, and preference for hired labor.

IV.2.3 Collective/community participation

Collective participation was highest for communities with high levels of economic development (**Table 11**). People from this community seemed to have more resources, time, and money to share. Moreover, people could be more aware of the need to have their voices heard during the planning process for the development of their barangay. People were more willing to give more to worthwhile social and environmental community projects. A similar finding was observed in Bicol where rice farmers donated more funds for community projects when their income increased after their village became an agrarian reform community (Paunlagui and Rola, 2001).

People in the community with low and moderate levels of economic development also participated in community activities though in a lesser degree. Perhaps, they contributed more of their free labor to the community's clean-up drives, repair of school

fence, and cleaning of the cemetery through *pahina* (a local term for collective labor). This was particularly true at the time a beautification competition among the barangays was held in Lantapan.

Interestingly, collective/community participation ranked lowest in Victory. Perhaps, the opportunities to participate in collective action were not there. In the study of Paunlagui and Rola (2001), the hiring of people by the local government to cut grass along the streets and for other clean-up drives led to a decline in community participation. As one participant said, "Every work was being paid on a daily basis."

IV.2.4 Level of trust

The level of trust is a community-level indicator. It is the only attribute used in the construction of the social capital index, which was taken from the FGDs. The level of trust among associations and organizations present in the community and the government agencies and NGOs providing assistance to the community was highest in the community with moderate level of economic development (**Table 12**). Perhaps, the presence of external institutions such as the NGOs and even the external investors who have helped the people in their livelihood activities, increased their level of trust.

Table 12. Level of trust, by level of economic development, 2003.

Level of economic development	Index of trust [a]
Low	**1.88**
Cawayan	0.98
Victory	2.78
Moderate	**2.37**
Baclayon	2.67
Basac	2.01
Songco	2.42
High	**2.28**
Alanib	2.20
Balila	2.50
Kibanggay	2.14

[a] *1 – low, 2-moderate, 3-high. Source of basic data: Focus Group Discussions (FGDs)*

It should be noted that the very high level of trust in Victory was ethnicity-related. Majority of the participants in the FGD belonged to one migrant group, who expressed their trust in their comigrants only and in the groups which they formed.

In most instances, an ethnic relation is seen as important in building social capital. The WB report (2002) stated that whether it is microenterprise development, tribal nepotism or racial conflict, ethnic ties are a clear example of how individuals who share common values and culture can band together for mutual benefit. Ethnic groups are sources of financial and human capital (Geertz 1962) and foster sharing of expertise and avoidance of direct competition (Weidenbaum and Hughes, 1996) for new entrepreneurs. Ethnic ties provide information on how to secure informal credit, insurance, child support, English language training, and job referrals for new immigrants (Portes, 1995). But ethnic groups can also exhibit the downside of social capital (Portes and Landolt, 1996 cited in Brown, nd). This mean that support and

assistance are shared only by members of particular ethnic group to the majority of the people in the community.

Cawayan registered the lowest level of trust. As explained earlier, this was due to their bad experience with one of the organizations, which failed in the past.

Table 13. Assessment of soil quality, and social capital index, by level of economic development, Lantapan: 2003.

Level of economic development	Assessment of soil quality [a]	
	Declining	Increasing
Low	**1.77**	**1.80**
Cawayan	1.80	1.80
Victory	1.73	-
Moderate	**1.99**	**2.33**
Baclayon	2.00	2.50
Basac	2.00	2.50
Songco	1.98	1.98
High	**2.16**	**2.17**
Alanib	2.09	2.00
Balila	2.38	2.50
Kibanggay	2.01	1.99

[a] Means no response. 1 – low, 2 – moderate, 3- high.
Source : Rola, et al. (2003).

IV.3 Social Capital and Soil Productivity

Soil quality was used to represent natural resource quality.[3] All respondents were either farmers or laborers in the farm. They were thus in a position to observe changes in the soil productivity in the past 5 years.

The index of social capital was higher among respondents who perceived that their soil productivity has improved during the past 5 years, regardless of level of economic development. However, the difference was very slight for communities with high level of economic development (**Table 13**). As previously mentioned, this relationship can be spurious.

IV.4 Social Capital and Eco-governance

The latent variable for environmental governance is the attendance of people in meetings organized by their officials. At the community level, the researchers attempted to gather data on the barangay's budget allocation to protect or conserve soil and water resources as a variable to represent eco-governance. However, none of the barangay officials set aside money for this purpose. The most frequently mentioned reasons are the lack of enough funds even for basic services and the leaders only relied on national government agencies and environmental organizations. The respondents in the FGDs, however, acknowledged the different environmental projects sponsored by the government and nongovernment agencies in their barangays. These are KGV of the

[3] An attempt was made to use water quality as a proxy variable for the quality of natural resources; however, it was excluded because not all barangays included in the study were located where a river flows.

Kitanglad Integrated NGOs, Tigbantay Wahig of SANREM, Heifer Philippines, Inc., ICRAF, and the Department of Environment and Natural Resources. In fairness to the local barangay officials, they were indirectly responsible for the setting up of environment-related groups in their barangay. Had they not accepted the support from the NGOs, no programs would be launched in their area.

Overall, social capital was higher among respondents who always attended the meetings organized by local officials (**Table 14**). The people may have perceived that their barangay officials are working for the interest of the majority, and they responded positively to the call of their officials by attending the meetings. They also believed that they could easily ask for help, that people are consulted, and that they were able to get livelihood opportunities for the people. The pattern was consistent for all barangays.[4]

Table 14. Environmental governance and social capital, by level of economic development, Lantapan, 2003.

Level of economic development	Attendance in meetings [a]	
	Sometimes	Always
Low	**1.51**	**1.83**
Cawayan	1.41	1.84
Victory	1.61	1.82
Moderate	**1.76**	**2.15**
Baclayon	1.67	2.29
Basac	1.75	2.15
Songco	1.86	2.00
High	**2.07**	**2.12**
Alanib	2.19	1.92
Balila	-	2.42
Kibanggay	1.95	2.01

[a] Means no response. 1 – low, 2 – moderate, 3- high.
Source: Rola et al. (2003).

Balila was an interesting case. All the respondents have always attended meetings. Furthermore, the index of social capital was highest here compared with other barangays, regardless of level of economic development. This pattern was consistent with data in Table 11 that showed that Balila ranked highest in collective/community participation.

IV.5 Social Capital, Governance, and Quality of Natural Resources

Respondents who have always attended meetings and who perceived that their soil productivity has improved registered higher level of social capital regardless of the level of economic development (**Table 15**). Perhaps, this is an indication that with good governance, which enhances social capital, it can encourage people to collectively work for the protection and conservation of natural resources in general, and soil productivity in particular. About 83% of the respondents who perceived that their soil productivity has deteriorated are willing to pay additional tax for the protection of natural resources (Rola, et al. 2003).

[4] However, confidence of household respondents in their local officials was found to be low (Rola et al. 2003).

Respondents in the FGDs from both types of community are willing to pay for programs/ projects to protect and conserve the natural resources. The amount to pay varies from PhP 5.00 to PhP20.00 per month. In the community with low level of economic development, respondents readily responded positively. The participants from the community with high level of economic development are also willing to pay depending on how the local officials will use their contribution. In other words, there should be transparency. The challenge now is for the local officials to sustain the opening or widen the "space" for the protection and conservation of natural resources.

Table 15. Environmental governance, and social capital by level of economic development, Lantapan, 2003.

Level of economic development	Attendance in Meetings [a]			
	Sometimes		Always	
	Soil quality assessment			
	Deteriorating	Improving	Deteriorating	Improving
Low	**1.61**	**1.62**	**1.81**	**1.91**
Cawayan	-	1.62	1.80	1.91
Victory	1.61	-	1.82	-
Moderate	**1.76**	**-**	**2.09**	**2.33**
Baclayon	1.67	-	2.17	2.50
Basac	1.75	-	2.09	2.50
Songco	1.86	-	2.02	1.98
High	**2.16**	**1.97**	**2.13**	**2.18**
Alanib	2.36	1.97	1.96	2.05
Balila	-	-	2.38	2.50
Kibanggay	1.95	-	2.04	1.99

[a] Means no response. 1 – low, 2 –moderate, 3- high. Source: Rola et al. (2003).

V. Conclusions and Future Research Agenda

The aim of this paper is to determine whether variations in economic conditions of communities affect the level of social capital, whether social capital contributes to the conservation and protection of the environment, and whether the quality of the local political environment and levels of social capital influence better management of natural resources. To address these objectives, data were sourced from two levels: household data from a survey conducted by Rola et al. (2003) and community data from the FGDs.

There was a variation in the level of social capital when examined in terms of level of economic development. However, it was contrary to conventional wisdom because the aggregate index of social capital was higher in communities characterized by higher levels of economic development. The pattern was similar when two alternative measures of social capital were computed: index of reciprocity and collective action and collective participation only. There are explanations to this. One could be the inclusion of determinants such as membership in organizations in the computation of the social capital index. There are fewer of these organizations in communities under low economic conditions. The collective participation and reciprocity indices were lower in these more economically constrained communities. This could be a function of the exclusivity of the several ethnic groups living in the area.

As hypothesized, the aggregate level of social capital was also higher where soil productivity was perceived to be better. These were likewise found in more economically progressive economies. In a related paper (Rola et al. 2003), respondents said that the quality of soil deteriorates because they have intensified production but they cannot buy enough fertilizers. In the high economic development scenario, farmers have enough cash to invest in fertilizers. Hence, relating this to social capital is a bit spurious at this time.

The relationship between social capital and eco-governance was positive. Social capital was higher in all communities where local people always attend meetings organized by local officials.

The three-way relationship between eco-governance, quality of natural resources, and social capital was observed only among respondents who have always attended meetings **(Table 15**). This is seen as promising because, as results suggest, if there were good eco-governance, people have a high propensity to collectively participate in the management of natural resources. As the UNDP (2001) has pointed out, higher social capital is seen as an opening or "space" to protect and conserve soil resources. On the other hand, good environmental governance is seen to make that opening or "space" sustainable. Caution dictates that social capital can be seen as giving policymakers useful insights into the importance of community, the social fabric, and social relations at the individual, community and societal levels in natural resource management, but this is not a single magic bullet that can solve all policy problems (Aldridge et al., 2002).

The literature on social capital reveals many ways of operationalizing the concept of social capital, depending on the nature of the study, and many methods of measuring social capital. Thus, future studies should clearly define and operationalize the concept and methods for measuring social capital should be clearly specified. Also, this would help avoid what Poteete and Ostrom (2002) has pointed out that the differences in definition and measurement may result in contradictory findings actually contradicting and similar finds actually referring to different issues. This study has demonstrated the complexity of measuring social capital, inasmuch as these measures cannot be consistently defined in both upland and lowland communities.

Other lessons were learned during the conduct of the study. Other economic indicators should be included and more sophisticated measures of natural resource management should be defined. Currently, we find a seemingly spurious correlation between levels of economic development and natural resource management quality via the social capital index.

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Annex A. Relational matrix showing the level of trust between a pair of groups/associations present in the community.

Organization	A	B	C	D	E	F	G
A							
B							
C							
D							
E							
F							
G							

Source: Contreras. 2000. Note: Use the following scales: 1-low 2-medium 3-high. Letters A and G are notation for possible organization present in the community.