

BIBLIOGRAPHY

ATAYOC, JOSE P. April 2010. Analysis of Agricultural Land Conversion in La Trinidad, Benguet. Benguet State University, Open University, La Trinidad, Benguet.

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ABSTRACT

La Trinidad, Benguet is generally described and tagged as an agricultural area. Actual case of land conversion is observed and done in this time of fast paced development from 1991 to 2008. Specifically, Betag and Puguis barangays were the identified study sites where massive agricultural, socio-economic as well as environmental activities are caused by the land conversion process.

Results revealed that agricultural land conversion in barangays Betag and Puguis are affected by increasing population and acquisition of lots for residential area like the establishment of Palmaville Subdivisions, originally an agricultural land to become a booming residential area.

There were 548 residential and commercial buildings constructed in barangays Betag and Puguis from 1991 to 2008, occupying a total land area of 93,519 square meters or 0.79% area equivalent in both barangays. A total land area of 45,006 square meters was occupied by the buildings built in Barangay Betag over a period of 17 years representing 2.87% of the total barangay area.

Compared with barangay Puguis with slightly wider area occupied by constructed buildings covering 48,513 square meters or 0.47% of the total barangay area.

More health, crime and traffic problems due to fast population increase is the considered the number one social effect on agricultural conversion in both barangays. On the other hand, barangay Betag identified lost or reduction of community cohesiveness or belongingness which is commonly observed in urbanizing area as the second social effect compared with promotion of availability of social services in barangay Puguis.

Along economic aspect, barangays Betag and Puguis viewed increasing business activities, more income and increasing land value as the major effects of agricultural land conversions. These are manifested by the 24/7 transportation service operation, establishment of private and government institutions, automobile shops, computer shops, and other business establishments.

The contamination of water supply and air pollution due mainly to garbage, domestic wastes and vehicular emission were identified as environmental effects of agricultural land conversion by both barangay respondents.

There is a significant difference on the perception of solutions to minimize agricultural land conversions and its adverse effects in La Trinidad Benguet. Barangay Betag focused on the issue of improving the fertility of the soil for agricultural lands, establishment of more business cooperatives and promotion of organic farming to support to farmers income while Barangay Puguis

respondents focused on the improvement and modernization of irrigation system to sustain agricultural activities.

Based on the above findings, it is recommended that policies and rules and regulations on land conversion should be strictly implemented in order to other social and economic support services will be provided by the local government units as well as other concerned agencies.



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INTRODUCTION

Background of the Study

The role of agriculture in the socio-economic development of communities has received increasing attention in recent years, reflecting the growing awareness among rural sociologists, economists, politicians, planners, and development practitioners that the problems of mismanagement and underdevelopment cannot be solved without a solution to the problem of agricultural stagnation (Crosson, 1970).

This condition has changed over time with a tremendous shift of productive agricultural areas to other uses like commercial and industrial. The shift has caused agricultural lands to decrease, which affects the operation and activities of development. On the other hand, the shift resulted to more integrated activities, which support the social and economic status of people and communities. Given this situation, it is necessary to show that efforts towards development and management of communities are of prime importance especially if these cause dramatic change in social, economic and environmental conditions.

The development of a particular area is dependent on the different activities orchestrated and implemented by its people and institutions present. Through time, people adjust to these changes, which affect their lives and the place they live in. This is what happened to La Trinidad,

Benguet. It started as a simple community of agricultural endeavors and now to a budding first class municipality of social and economic development.

La Trinidad, Benguet is a classic example of a fast-paced developing community. Originally, it was an agricultural area planted with rice and rootcrops. These were considered then as the major commodities grown and produced. As years passed, this kind of agricultural production shifted from rice to vegetables particularly cabbage, broccoli, lettuce, carrot and beans. Large scale vegetable farming boomed in the municipality in the 1960's making La Trinidad a leading vegetable producer in the entire country. Also, it incorporated several agri-related activities like trading, banking, agricultural education and training, and industry and development.

The increasing vegetable production led the local people to trade their produce as influenced by Chinese traders who also started the restaurant businesses in Baguio City and La Trinidad. These businesses helped develop La Trinidad and Baguio City from agriculture industry into combined commercial and residential businesses and other establishments to cope with the booming and developing municipality (Cheng, 2006 as cited by Kacayon, 2009).

In the 80's, La Trinidad earned the distinction, "The Salad Bowl of the Philippines." Toward the end of 1980's, farmers began to shift from vegetable production to strawberry and cut-flower production. In 1998, Barangay Bahong was declared, "The Rose Capital of the Philippines." Today, La Trinidad is recognized, as "The Strawberry Fields of the Philippines." At the same time, it incorporated other agriculture-related activities for increased socio-economic and ecological development.

Aside from these distinctions, La Trinidad is known as the trade center of Benguet province and the entire Cordillera Administrative Region. To date, it remains an agricultural area with urbanization fast creeping in the valley area and rapidly increasing as a diversified business center with big investments coming in.

La Trinidad also accommodates the site of one of the regional educational centers in the Cordilleras. The establishment of Benguet State University (BSU) serves as the entity for agricultural education development particularly on instruction, research, extension, and production services. Aside from being the capital town of Benguet, it is the seat of several regional offices such as: Department of Science and Technology (DOST), Commission on Higher Education (CHED), Commission on Audit (COA), National Commission for Indigenous Peoples (NCIP), Department of Education (DepEd), and Department of

Public Works and Highways (DPWH). As such, many students and employees residing in this capital town come from other places.

The services needed by these students and employees, and tourists alike, promote businesses and attract more people to flock to this capital town. Many have already acquired lots and constructed their houses, and still, many are in the pursuit of land acquisition and house/building constructions or both. Big offers tempt owners of agricultural lands, especially along the roads and nearby business areas, sell their lots to rich people who eventually convert the areas into residential and other commercial uses.

Consequently, the population of La Trinidad continues to increase rapidly necessitating expansions of commercial, industrial, and human settlement areas that further the conversion of agricultural lands for such necessities. This scenario has serious impact on food security.

Furthermore, the massive land conversion for non-agricultural purposes is one of the major factors for dwindling rice supply, food insecurity, and rising costs of basic commodities in recent years. These lands were transformed into subdivisions, commercial centers, recreation camps, golf courses, export processing zones, mines, and other non-agricultural purposes (Ombion 2008).

Recognizing its adverse impact to food production and other possible negative consequences, La Trinidad Municipality ignored last year a proposal for the construction of a shopping mall right in the valley because of space; however, the municipal government recognizes that investments are necessary for the development of the area (<http://www.agribusinessweek.com>).

The fast turnover and development from agricultural condition to commercial and industrial situation prompted the La Trinidad local government to prepare and develop their comprehensive land development plan. The plan is a blueprint of development efforts of the municipality to maintain the natural landscape of the area and not to destroy its natural resources. Specifically, it is the agricultural land that is to be maintained or diversified, because of its living testimony to an agricultural municipality.

In support to the foregoing views on the adverse impact to food security of agricultural land conversions, this study was conducted with an end view of saving the remaining highly productive agricultural lands in La Trinidad and other areas as well.

Given these concerns, La Trinidad is an ideal area to study development trends and management of resources vis-à-vis comprehensive land development. It will address the concern on land

conversion of agricultural areas to commercial and industrial purposes or both causing a massive change in natural landscape.

Statement of the Problem

Land conversion is an important aspect in rural and urban management including community development. Certain communities pass this kind of physical change, because of factors in technological interventions and socio-economic influences affecting them.

With the present condition of La Trinidad, Benguet and the completion and preparation of a new comprehensive land use plan, the municipality is an ideal area to study the effects and implications of land conversion particularly on agricultural development.

The many physical landscape changes as well as socio-economic changes in the municipality are very appropriate to analyze in relation to their implication to urban management. As a fast-changing municipality, La Trinidad, Benguet must describe, and show direction and trends for more in-depth study of urban management and development.

The main focus of the study is to analyze the condition of La Trinidad in three important aspects of land conversion, namely social,

economic, and environmental development. In order to understand the municipality's condition, the following questions were answered.

1. What are the factors affecting agricultural land conversion to other uses in La Trinidad, Benguet?

2. What is the rate of land conversion from agricultural to residential and commercial or industrial purposes?

3. What are the social, economic, and environmental effects of land conversion?

4. What are the recommended solutions to minimize the agricultural land conversion to other uses and its adverse consequences?

Objectives of the Study

The main objective of the study is to analyze the agricultural land conversion process in La Trinidad, Benguet. Specifically, the study aimed to:

1. Identify factors affecting agricultural land conversion to other uses in La Trinidad Benguet;

2. Determine the rate of land conversion from agricultural to residential and commercial or industrial purposes in Barangay Betag and Puguis, La Trinidad, Benguet.

3. Identify the social, economic, and environmental effects of agricultural land conversion.

4. Formulate solutions to minimize the agricultural land conversion to other uses in La Trinidad, Benguet.

Scope and Limitation of the Study

The study on land management including conversion to other uses entails a very wide coverage. It incorporates all aspects of social, economic, ecological, technological, and political dimension. Considering that La Trinidad, Benguet is an example of naturally occurring development along side processes, this research is very ideal to understand the factors influencing changes and growth as well as development trends.

The study focused on the agricultural land conversion process in two barangays of the municipality. These are Barangay Betag in the middle of the valley where it nestle the agricultural development activities of the area and Barangay Puguis, because of its major contribution to agricultural, commercial, and industrial development.

These barangays were chosen, because of the physical and geographic changes that occurred and affected agricultural development

including the physical reforms brought about by constructions of buildings, improvement of the natural setting, and changes of landscape. These items made the selection of the barangays more relevant to the study.

In addition, the period 1990-2008 was covered because the two comprehensive land conversion plans prepared by the La Trinidad Development Planning Office are important inputs in the analysis of the agricultural land conversion of the municipality. At the same time, this period hypothetically illustrates physical changes in the identified barangays towards management of resources and socio-economic and ecological development.

Furthermore, Municipal and Barangay key Officials and members were interviewed to solicit pertinent research data affecting the overall management of La Trinidad, Benguet in terms of land conversion. This study was conducted from June 2008 to September 2009 incorporating document analysis, physical observation and data gathering, interpretation, and analysis.

The analysis done on this research focused and emphasized on urban management, because of the fast-paced development of La Trinidad as an example of a fast-rising urbanized area within the confines of a rural lifestyle. Agricultural practices including production and marketing together with land conversion process were cross-checked with

policies, strategies, barangay conditions, and respondents' profiles for more conclusive results and implications to urban management and community development.

Importance of the Study

The focus of the study is one of the major challenges in rural and urban planning and management. Land conversion is a major issue of most local government units especially on prime agricultural lands. Several study show that land conversions are considered important programs in areas where land are not fully utilized or abandoned through the years. They provide new direction of development especially if these are towards the improvement of the living condition in the place (Personal communications, VCA Ubaldo and F. de Los Santos 2009).

These shared views are sufficient reasons why the study must be conducted. The study helps us to understand the importance of land conversion in the development of a place. Specifically, it will provide broader insights to local government units particularly the office of the development planning in the development of appropriate actions and projects to consider. At the same time, it will lead key officials maintain

the original purpose and use of lands especially if these are of cultural or heritage and even educational purposes.

Furthermore, the study will provide new direction of learning for development planners and area developers in land zoning and diversification. In effect, strategic operations will be properly utilized and effectively managed.

Also, this study will help other professionals particularly engineers, agricultural officers, and other planners to re-evaluate programs affecting agriculture and natural resources especially related to and affect food security and sustainable development.

Finally, lessons learned and experiences in the conduct of this research can be shared to students and practitioners in rural and urban planning and management to appreciate the tools and methods used by the researcher in coming up with a comprehensive analytical contribution to development.

Conceptual Framework

Figure below shows the paradigm of the study in support to the analysis of the agricultural land conversion process of the study area.

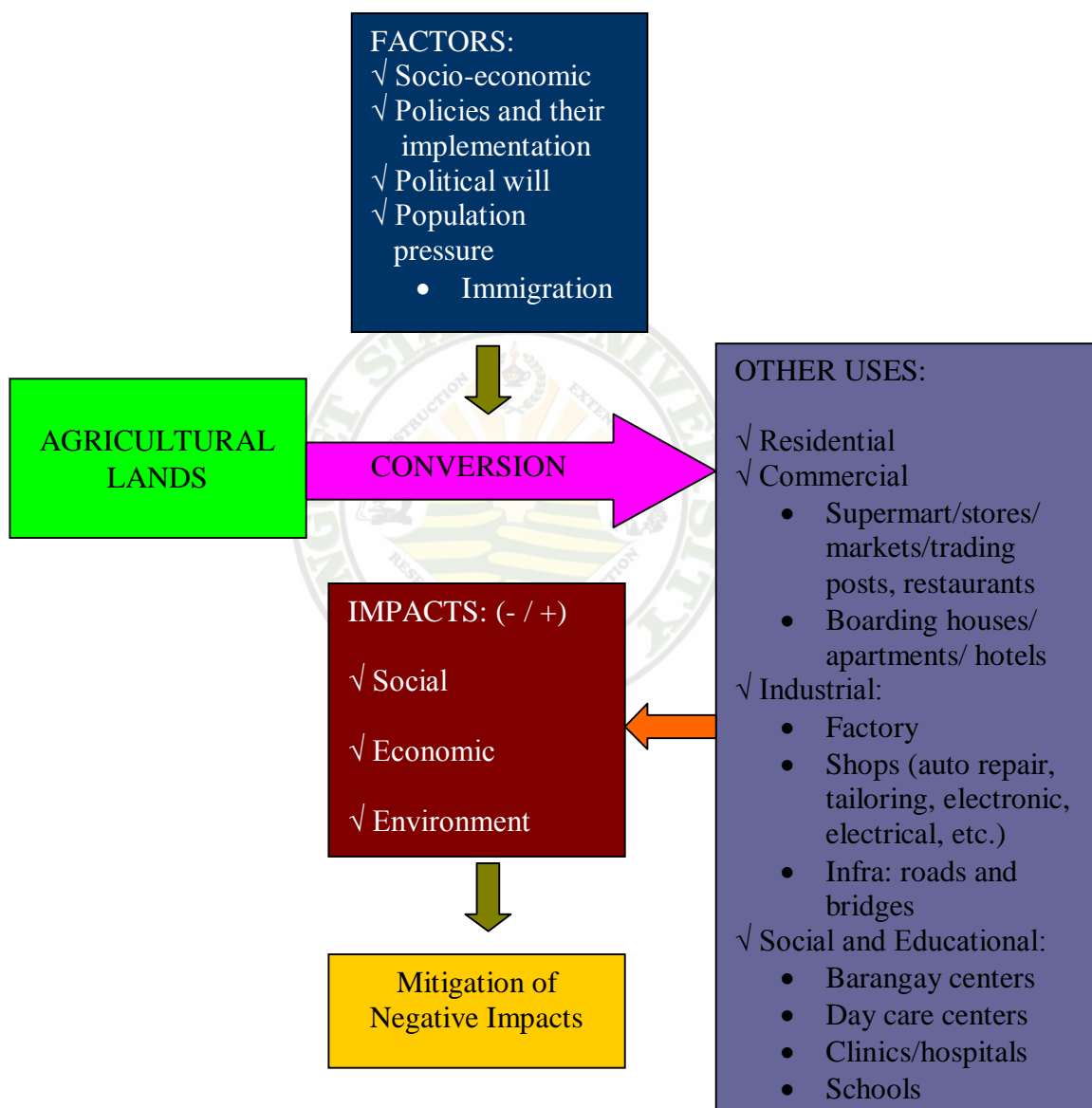


Figure 1. The paradigm of the study in relation to the agricultural land conversion to other uses in La Trinidad, Benguet

Conversion of agricultural lands to other uses is governed by Republic Act No. 6657 or the “Comprehensive Agrarian Reform Law of 1988” which provides the legal framework for the conversion of agricultural lands to non agricultural uses in order to achieve optimum public benefit from lands as a national resource for public welfare.

The Department of Agrarian Reform (DAR) is authorized to approve or disapprove the conversion, reclassification, restructuring or readjustment of agricultural lands into non-agricultural uses. The conversion of lands from agricultural into non-agricultural uses is allowed when the proposed use conforms to the land use plan or development plan of the city or municipality and said land use or town development plan has been approved by the Housing and Land Use Regulatory Board (HLURB) and validated by Department of Agrarian Reform (DAR). In case the proposed use does not conform with the approved land use plan of the city or municipality, the conversion may be allowed under the following conditions: 1.) when the land is intended to be used as (a) a government or joint venture private – government low-cost housing project, as certified by the National Housing Authority (NHA), (b) a government or joint private-government industrial venture or project as certified by the Department of Trade and Industry (DTI), or Department of Tourism (DOT) with location clearance has been issued by the HLURB; 2.) when the land has ceased

to be economically feasible and sound for agricultural purposes as certified by the Provincial Agricultural Officer of the Department of Agriculture (DA) assigned to the province; and 3.) when the locality has become urbanized and the land will have a greater economic value for residential, commercial, industrial, or memorial park purposes as certified by the HLURB deputized Zoning Administrator. These rules shall cover all private agricultural lands whether tenanted or not, and regardless of crops or commodity produced. Aside from this, the Local Government Code of 1991, Section 20, gives local government units (LGUs) the power to reclassify lands to other uses in their jurisdiction.

Proper implementations of such laws are mainly intended to optimize benefits from agricultural lands and to ensure sufficiency of food production. Increase of population that consequently increases demand is a major pressure leading to the conversion of prime agriculture areas into residential and/or commercial uses. High demand for housing and socio-economic services enormously increases prices of lands and makes commercial establishments (stores, hotels, restaurants, etc.) more profitable and more convenient sources of income than agricultural crop production. Such increase of prices and profits and convenience entice agricultural land owners to sell or convert to commercial establishments their agricultural lands.

As more population is settled in a community, more infrastructure and social and educational services have to be established, further diminishing agricultural areas. This scenario may continue until an area is completely urbanized that completely depends up on imported crop and livestock production from other areas.

Political leaders' decision-making mainly determines rate of agricultural land conversion in their respective communities. In La Trinidad, the current Mayor, Hon. Artemio A. Galwan, prefer to retain the town's name as the "Strawberry and Rose Gardens or capital of the Philippines" (La Trinidad Comprehensive Land Used Plan 2000 - 2010).

Socio-economic and environmental impacts are the primary bases in allowing or disallowing agricultural land conversion to other uses. But the socio-economic impacts seemed to be more important basis in the locality. As observed, where people are more concentrated, the more environmental damages are incurred.

The main issue related to this agricultural land conversion is food production or security. Mouths to feed inevitably increase while our crop production areas continue to decline. This scenario may lead our farmers to operate and develop our forest and mountainous areas for food production in the near future. Our people need food and obtaining it may result to greater concern.

This study will analyze the agricultural land conversion in the study area and formulate recommendations based on the results to mitigate identified adverse consequences of, and optimize benefits from conversion, at the same time to at least minimize the rate of prime agricultural land conversion to other uses.

On the other hand, it is also very important that local development plans must have concrete goal and objectives to be achieved as stated in the vision and mission.

The vision of La Trinidad is “a dynamic, self-sustaining, ecologically-balance, and peaceful community where God-Loving and healthy people live in an atmosphere of social justice and effective governance” (La Trinidad Development Plan, 2007). Thus, the municipal development plan is anchored to this vision. Specifically, the LGU and other stake holders are empowered to implement the development plan in accordance with Executive Order No. 72, s. 1973 with the accompanying Zoning Ordinance and resolutions of the Sangguniang Bayan of the Municipality and Sangguniang Panlalawigan of the Province (Comprehensive Land Use Plan 2000-2010).

Based on this, individual barangay development plan, allocation of annual budgets, and land use zoning and planning strategies are prepared to respond to sectoral concerns like human resources development,

economic services, social services, infrastructure, agriculture, land use, and environmental management. The attainment of the goals and objectives of the plan lies on the effort of the implementers, the municipal and national government, NGOs, and the people themselves.

Implementation of Development Plans and Programs

Development plans and programs are important tools in understanding and setting the direction and changes or growth of a particular community. It is also the basis in managing and utilizing resources. One of the resources identified is land. Land resource is the central factor of development and people activities. It is also an aspect of study in several fields.

Rural or urban management and development looks at resources as means to improve capacities of the government at the local, provincial, regional, and national levels. Based on this, the national government must devolve more functions at the local levels to create and broaden their own sources of revenue and the right to the utilization and development of the national wealth within their respective areas including local capacities to provide consistent and relevant policies. This is very common in local planning and development (PSRDI, 1998).

Local Government officials, planners, urban managers, and other stakeholders, on the other hand, need to improve their institutional capacities in the planning and management of the land, urban infrastructure, economy, housing and community development, social services, development finance, and the management of other sectors and participatory governance.

One of the constraints in the implementation of development plans and programs of the national and local governments is the budgetary requirements to finance development projects that could have improved the quality of life of their constituents (<http://home.earthlink.net/~lordprozen/PUF/bahang/state.html>).

Although some city governments have been successful in investment planning, financial management, and revenue generation, performance levels need to be improved and evaluated.

On the contrary, to attain a successful implementation of development plans and programs, partnership between LGU and civil society groups towards achieving sustainable development plans must be strengthened. (<http://home.earthlink.net/~lordprozen/PUF/bahang/state.html>).

Goodman and Love (1974) mentioned that lack of well-qualified personnel and appropriate organizations to implement development

schemes can hamper the achievement of planning goals. It also leads to lack of management and administrative capacity to direct projects in some countries. Consequently, it ensures a project to be administered effectively within an appropriate agency or organization. More over, it requires managers, planners and implementers to improve their capabilities in planning and management.

It is for this reasons that the Mountain Province State Polytechnic College prepared its Development Plan as a guide in implementing its plans through capability building, continuing education, upgrading and re-tooling of competencies.

Based on observations, one of the constraints in plan implementation is budgetary requirement. In like manner, the Mountain Province State Polytechnic College is not spared from this. The administration's strategy is to explore other sources from national and local government units, and other funding agencies including non-government organizations as well as strengthening of linkages and partnership with LGU, NGO and other institutions for the smooth implementation of its development plan (MPSPC Development Plan 2005 to 2013).

Management of Resources

One of the government's responsibilities is to sustainably manage the resources which require decision-making at the higher levels of public bureaucracy involving the participation of the people and communities. Consequently, strategies failed to minimize the effects of improper management of natural resources such as lands, forests, rivers, and lakes. In view of this, there is a need to emphasize people and community responsibility and accountability on managing the resources.

The World Commission on Environment (1987) states that environmental and natural resource management should be integrated into economic planning. Through the Philippine Urban System, urban structures required in economic production, strengthen local comparative advantages and improve quality of life must be developed.

An attempt to provide a comprehensive agenda of action must be geared towards instituting legal, institutional and financial reforms as well as capacity building measures for both government and non-government sectors in order to pave way the way for sustainable human settlements as response to increasingly urbanizing Philippine cities.

Based on this, the implementation and management of the program, an interagency committee was created comprising the Housing and Urban Development Coordinating Council (HUDCC) to oversee and

ensure the accomplishment for a unified national shelter program and proper use of resources.

On the other hand, the Home Development Mutual Fund (HDMF) or otherwise known as known as Pag-ibig. fund focuses on the administration of a nationwide provident fund for the government's housing program and formulates other investment strategies relative to housing.

The Housing and Land Use Regulatory Board (HLURB) is the sole regulatory body for housing and land development. It ensures rational land use for the equitable distribution and enjoyment of development benefits. It also extends comprehensive and productive planning assistance to province, cities and municipalities towards the formulation of comprehensive land use plans (CLUPs).

The National Housing Authority (NHA) is the sole national agency mandated to engage in direct shelter production focused on providing housing assistance to the lowest 30 percent of urban income-earners through slum upgrading, squatter relocation, development of sites and services, and construction of core housing units. It also undertakes programs for the improvement of blighted urban areas and provides technical assistance for private developers undertaking low-cost housing projects (<http://home.earthlink.net/~lordprozen/PUF/bahang/state.html>).

These agencies are very instrumental in ensuring the appropriate management of resources which are critical in rural and urban management and development, and important institutions which support the implementation of local comprehensive land use plans.

Factors and Indicators of Development and Management

One of the greatest factors and indicators of urban development is increase in population. The increasing population in urban areas creates problems such as environment degradation, declining literacy rates, rising unemployment rates and lack of low cost housing units and other social services like protective services, access to potable water, and electricity.

These impel city or municipal governments and their civil society partners to rethink their development strategies in dealing with urban problems, which includes prioritizing of limited resources, innovation of ways to mobilize resources, reengineering of local bureaucracies and install the necessary infrastructure (<http://home.earthlink.net/~lordprozen/PUF/bahang/state.html>).

Coxhead and Buenavista (2001) found in their study that people migrate to the Municipality of Lantapan, Bukidnon due to economic reasons. This is attributed through the introduction of irrigation necessary in the shifting of farmers from single cropping to double cropping. Also, in

1950's the availability of lands were very cheap which could even be exchanged with alcoholic beverages and hiring of farm workers who decided to stay or reside in the area. While the increased of population may have contributed to the development of the municipality in terms of economic aspect, it was noted further that degradation of forest in the area also contributed I the change of physical condition.

As a manifestation, there was continuous clearing of forest for corn production and commodities suitable for upland areas. Other contributory factors identified were the profitability of commercial vegetable cultivation, road development and the lack of a well-defined and enforced property rights over the land (Cairns, 1995).

Impacts on Social, Economic and Ecological Development

Ecologically sustainable development (ESD) is a very much publicized and promoted principle since the Rio Earth Summit but has not proceeded beyond the rhetoric either in developed or developing countries. It is nonetheless a desirable principle by which planners can assess development proposals.

In addition, the Commonwealth of Australia in 1992 states that "Development improves the total quality of life, both now and in the future,

in a way that maintains the ecological processes upon which life depends.”

It can be said that ESD is successfully applied when the monetary values are weighted against non-monetary values such as social, cultural, visual, etc. and the environmental benefits outweigh the costs.

One of the policies of Ecological Sustainable Development is to integrate economic, environmental, and social goals in the strategic planning for the preparation of Comprehensive Land Use Plan of a municipality or city.

Likewise, the Philippine Agenda 21 defines the agenda for sustainable development based on strategic interventions across ecosystems; such as forests/uplands, coastal and marine, urban, freshwater, lowland/agricultural, including areas designed as mineral reserves and areas of high biological diversity.

Section 2 of Republic Act No. 7586 – National Integrated Protected Areas System Act of 1992 (NIPAS) also recognize that the protected areas, although distinct in features, possess common ecological values that may be incorporated into a holistic plan representative of our natural heritage;.... that the use and enjoyment of these protected areas must be consistent with the principles of biological diversity and sustainable development.

In the part of agricultural land conversion, the impacts on social, economic and ecological aspects are seen in the development applications. Most objections to development are based on amenity issues, which are either beneficial or detrimental. Among these are physical impacts such as pollution, noise, smell, increased traffic, etc; social impacts such as increased crime rates, and loss of parklands and other community facilities; economic impacts like loss of employment, transfer of employment, higher travel cost, etc; and environmental impacts like loss of habitat, bio-diversity, or non-renewable and absolute resources or both. These can only be reduced if development applications satisfy ecologically sustainable development.

Silberstein and Maser (2000) pointed out that developing community goals tied to economic development and not to economic growth is a good step. They argued that if economic growth is necessary to maintain full employment, which implies that there is a continuous increase in resources consumption we will soon realize it is impossible; because resources are finite.

On the other hand, the study of Coxhead and Buenavista (2001) revealed that farmers in the Municipality of Lantapan, Bukidnon are practicing highly commercialized agriculture providing a year-round

agricultural employment as well as a number of farm workers on a daily wage rate basis.

Related studies in the same site showed that agricultural intensification without adequate soil management has negative effects both on-site and off-site. The intensive cultivation of annual crops in general and the increased use of fertilizer, pesticides, and other chemicals on vegetable crops degrade water based on the result of Lantapan water monitoring (Deutsch, et.al., 1998).

Furthermore, Cairns (1995) noted also that the profitability of commercial vegetable cultivation has been the primary impetus of forest encroachment with decisive contributions from road development and the lack of well-defined and enforced property rights on land.

This is clearly seen in the decrease of land area owned by the people with fairly high hectare average of 12 hectares in the 1950s. However, in the 1980s, the average farm size has been reduced to 4 hectares (Costello, 1986).

In some developing countries, small farms are being predicted to soon disappear; but, they prove to be persistent and the total area of arable land occupied by farmers continues to grow. The people also proved that in times of economic decline, they stay on the farm or even

return to farming. Besides, strong rural economies based on efficient small farming allow workers to remain with their families instead of migrating.

Urban Planning and Management

Sound planning rests on the availability of a wide range of information about existing and potential investments and their likely effects on the growth and other national objectives. Realistic planning involves knowing the amount that can be spent on development activities each year and the resources that will be required for particular kinds of investment.

According to Brinckloe and Coughlin (1977) as cited by Meister (1997), proper planning will minimize costs by smoothing out workloads, and preventing discontinuities in the work of one division while waiting for work to be completed in another. Also, the success and failure of a project depend on the manager's management. Weak public administration and management are often the root delays and cost overruns of a project. Such weaknesses are manifested in inadequate planning, delays in land acquisition, protracted bidding and contracting procedures, insufficient project supervision, and slow response to change in the policy environment, and low staff morale and productivity.

Other important consideration in planning is the Involvement of intended beneficiaries in the planning and management of project. Meister (1997) also mentioned that financial difficulties are common causes of project failure. Evaluators of the UNDP's (1979) rural development projects found that a major constraint affecting the achievement of the project objectives is the transfer of technologies without local adaptation.

The constitution of the Philippines and a succession of codes, particularly the Local Government Code (LGC) clearly point the direction of planning for the community. This is to be achieved by the continuing devolution of powers and responsibilities to the Local Government Units (LGUs). These responsibilities of the LGUs include land use planning and development control consistent with national and provincial policies. These gives the legal obligation to the LGUs to prepare Comprehensive Land Use Plan which is one of the most important planning documents that contains the programs, plans, and projects that represent the expected outcomes of the LGUs, vision. The CLUP also effectively reflect the communities' and stake-holders' aspiration to an improved quality of life.

Operational Definition of Terms

Agricultural activity – refers to the cultivation of soil, planting of crops, growing of fruit trees, raising of-livestock, poultry, fish or aquaculture products, including the harvesting and immediate processing of such farm products, and other farm activities and practices performed in conjunction with such farming operations done by persons whether natural or juridical.

Agricultural development - is the process focusing on the enhancement or betterment of agricultural development work. It is also a land-based activity that includes the management of farm-land and production activities of crops, livestock, and people activities to encourage bountiful yield for the benefit of the rural or local community resulting to economic growth, social upliftment, and ecological enhancement.

Agricultural and conversion – refers to the process of converting or reclassifying agricultural lands to other uses like residential or industrial.

Agricultural land – refers to public or private lands devoted to agricultural activities as herein defined and not classified as mineral or forest land.

Comprehensive land use plan – is the document that defines the Municipality's/City's long-range intentions regarding the nature and direction of future developments. It contains elements on land use, transportation, community facilities, urban design and housing.

Change – refers to the transformation of the economy, society, and or ecology, which may give favorable or unfavorable results.

Development – is a multidimensional process, which includes changes in structure (institutional, social, and administrative), attitudes, customs and beliefs as well as acceleration of economic growth and reduction of poverty within the context of La Trinidad, Benguet.

Economic change – is a change in the living conditions of a community. Some indicators are road constructions, construction of commercial buildings, presence of schools, offices, etc.

Economic factors - are factors that have either positive or negative effects in the development of a community.

Ecological change – refers to physical change of an environment brought by the activities of man, which are either beneficial or detrimental to the environment.

Ecological factors – are indicators or issues and concerns that have either negative or positive impacts on social and economic development such as loss of employment, loss of habitat, increase in crime rates, etc.

Implementation – is an activity that supports specific policies in order to translate programs, plans, and projects into an achievable outcome.

Land reclassification - refers to the further classification and disposition of alienable and disposable lands into specific uses.

Land use – refers to the manner of utilization of land, including its allocation, development, and management.

Reclassification - refers to the official act of the city government for allowing the change in the classification of agricultural land into residential, commercial, or industrial lands manifested through an ordinance.

Social change – refers to change in the nature of social institutions, social behavior or social relations of a society, and community of people or other social structures.

Sociological factors – refers to the indicators that influence social development of a particular community such as migration, establishment of partnership and participation in the implementation of programs and activities.

Zoning - refers to the legislative act of delineating areas or districts within the territorial jurisdictions of cities and municipalities that may be put to specific uses, and their regulations subject to the limitations imposed by law or competent authority.

METHODOLOGY

Locale and Time of the Study

The study was conducted from April to September 2009 in Barangays Betag and Puguis of La Trinidad, the capital town of Benguet province. Figure 2 is the map showing the site.

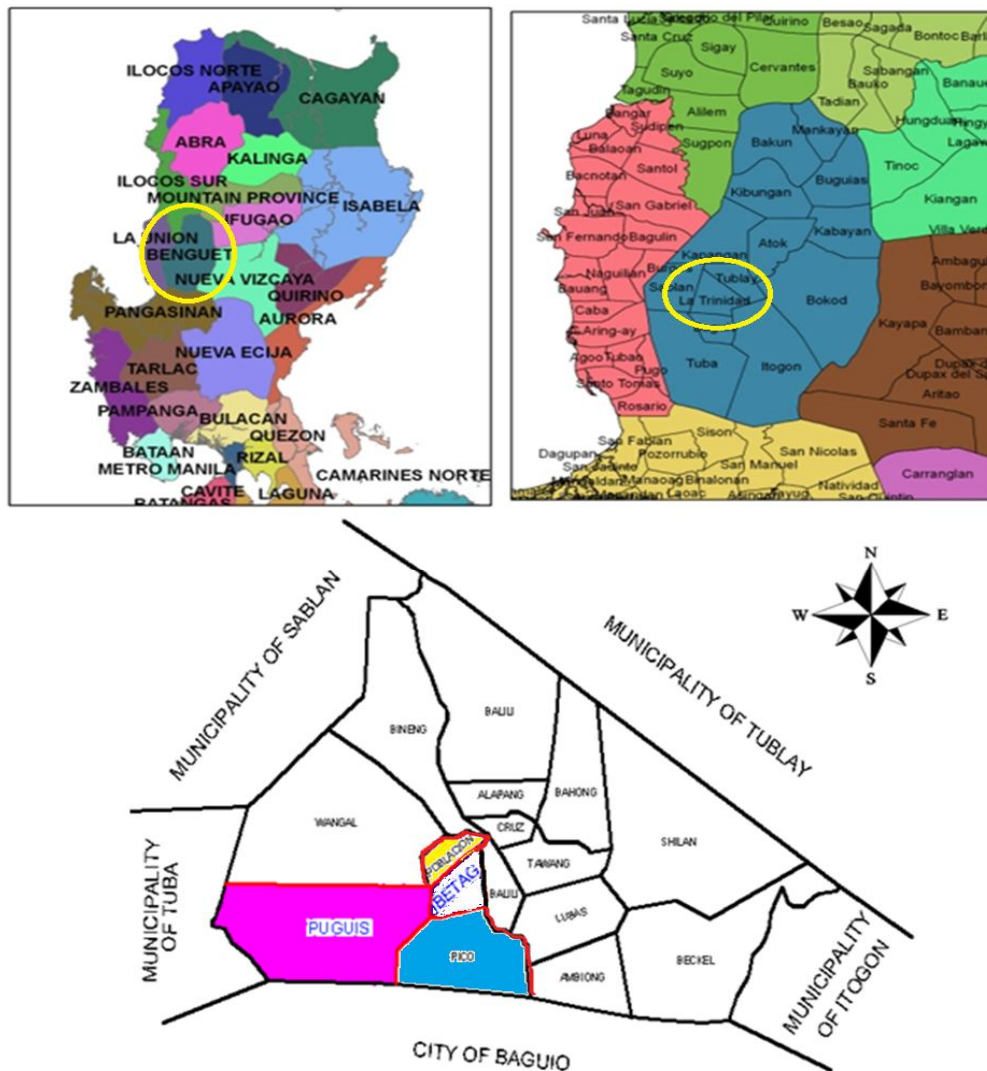


Figure 2. Map showing the study area

The research areas were selected because of the fast-paced changes of the physical, social and economic conditions including a very ideal case of agricultural land conversion process and management. Furthermore, the research areas represent La Trinidad valley with an area of 1,178.74 hectares.

La Trinidad municipality has 16 barangays which embraces a total area of 80.7951 square kilometers, representing 2.78 percent of the total area of Benguet province (29.92410 sq. km.).

It is the center of agricultural-related activities like education and training, trade and industry, and tourism support the social and economic development of the province as well as the Cordillera Region.

La Trinidad is located at coordinates of 16 degrees, 21 minutes north latitude and 120 degrees and 35 minutes east longitude. It is adjacent to Baguio City and 256 kilometers northeast of Manila. It could be reached by plane through Loakan Airport in Baguio City and by land transportation such as motorbikes, cars, jeepneys, and buses.

The elevation of this valley is 600 meters above sea level. La Trinidad's elevation ranges from 500 m to 1,700 meters above sea level, with mean elevation of 1,300 meters.

It has Type I climate based on Coronas system of classification which is characterized by pronounced wet and dry seasons, dry from

November to April and wet season during the rest of the year. During the rainiest month of August, the rainfall average is 850.70 mm.

The temperature is perpetually cool with invigorating atmospheric temperature ranging from 11.7 degrees centigrade during the month of December, the coldest month, to 23.2 °C during the months of March, April and May. The average daily temperature is 18.55 degrees centigrade and the average wind velocity is 1.43.

Research Design and Methods

The study used a combination of quantitative and qualitative research methodology. It describes the condition of La Trinidad, Benguet in relation to agricultural land conversion and the social, economic and ecological development derived from observations, documentaries and insights of individuals and organizations working on agricultural activities.

The study was supported by a guide questionnaire highlighting areas in social, economic and ecological changes as influenced by agricultural land conversion in Barangays Betag and Puguis. This was substantiated by further validation of collected data through personal interviews and photo documentation on critical areas of development like residential and building construction, land use conversion, farm lands and

businesses. In addition, key players in agricultural land conversion program in the municipality were interviewed personally by the researcher to obtain ideas, insights, and concerns toward development and management.

Furthermore, secondary data and available documents were analyzed to support the claims identified during the course of the research work. Respondents' knowledge particularly on issues, problems, activities, practices and other relevant areas of concern regarding agricultural land conversion to other uses in barangays Betag and Puguis La Trinidad, Benguet were conducted.

The guide questionnaire was pre-tested to test its validity and was reproduced for final administration from July to August 2009. It is composed of five parts; namely: Part I - profile of respondents; Part II - observations on agricultural land conversion; Part III- factors influencing agricultural land conversion to other uses; Part IV- the effects and implications of agricultural land conversion along social, economic, and environmental aspect; and Part V - solutions to minimize agricultural land conversions in La Trinidad.

The researcher secured permission from the municipal mayor of the municipality and the Open University Director before administering the instrument to the respondents. The respondents were asked to choose

one of the possible responses per item asked in each of the five parts of the questionnaire.

The following rating scale was employed to facilitate answering by the respondents and the quantification and qualification of the data.

<u>Rating Scale</u>	<u>Descriptive Interpretation</u>	<u>Symbol</u>
5	Strongly Disagree	SD
4	Disagree	D
3	Uncertain	U
2	Agree	A
1	Strongly Agree	SA

Respondents of the Study

A total of 300 respondents coming from barangays Betag and Puguis were surveyed. Each barangay has 150 respondents providing the necessary views and perspective on agricultural land conversion in the municipality. The respondents are composed of farm owners, workers, managers, and operators; business individuals; and government employees like agricultural technicians, planning and development officers, and Barangay officials (Table 1).

Table 1. Comparative profile of Barangay Betag and Puguis respondents

PROFILE	BETAG		PUGUIS	
	N=150	Percent	N=150	Percent
<u>Age</u>				
Below 20	1	0.67	8	5.33
21 – 25	6	4.00	21	14.00
26 – 30	25	16.67	37	24.67
31 – 35	48	32.00	29	19.33
36 – 40	21	14.00	10	6.67
41 – 45	12	8.00	13	8.67
46 – 50	16	10.67	10	6.67
51 – above	21	12.67	22	14.67
<u>Sex</u>				
Male	72	48.00	63	42.00
Female	78	52.00	87	58.00
<u>Civil Status</u>				
Single	38	25.33	38	5.33
Married	102	68.00	103	8.67
Widow/Widower	10	6.67	9	6.00

Table 1. Continued . . .

PROFILE	BETAG		PUGUIS	
	N=150	Percent	N=150	Percent
<u>Occupation</u>				
Government Employees (Agric'l Technicians, PD Officers, Brgy. officials and Kagawads)	8	5.33	8	5.33
Professionals (Doctors, Nurses, Engineers, Teachers, Lawyers)	40	26.67	42	28.00
Business Related (Business Managers, Operators, Store Owners)	35	23.33	33	22.00
Agriculture-related (Farmers and Traders)	55	36.67	57	38.00
Others (Students, Drivers, Homeowners)	12	8.00	10	6.67

Specifically, there are seventy-two (72) males and seventy-eight (78) females in Barangay Betag compared with eighty-seven (87) males from and sixty-three (63) females in Barangay Puguis. In terms of age, Barangay Betag has an average age of 40.7 years old while Barangay Puguis has average age of 36.6 years or an average mean age of 38 years old for both barangays.

Furthermore, it was noted that the majority of the respondents are married with 102 or 68% in Barangay Betag and 103 or 68.7% in Barangay Puguis, respectively; both barangays have 38 or 25.33% single respondents.

In terms of occupation, there are 130 Betag and 132 Puguis respondents who are professionals like doctors, nurses, engineers and lawyers; working in business and agricultural-based activities like farmers, owners and traders of agricultural products. The other respondents are government employees employed at the municipal and barangay government units and as students and drivers or homeowners.

Table 2. Number of years as resident and homeownership of respondents in Barangays Betag and Puguis

PROFILE	BETAG		PUGUIS	
	N=150	Percent	N=150	Percent
<u>No. of years as Resident</u>				
Below 10	30	20	28	18.67
11 – 15	12	8	12	8
16 – 20	21	14	20	13.33
21 – 25	14	9.33	14	9.33
26 – 30	28	18.67	25	16.67
31 – 35	16	10.67	16	10.67
36 – 40	10	6.67	7	4.67
41 – 45	3	2	10	6.67
46 – 50	5	3.33	12	8
51 – above	11	7.33	6	4
<u>Observations on Land</u>				
<u>Conversions</u>				
Own a house	83	55.33	85	56.67
Renting	63	42	59	39.33
Caretaker	4	2.67	6	4

This could be attributed by the migration of people from nearby municipalities and provinces where their occupation and livelihood are within La Trinidad and Baguio City. The residents lived in the municipality between 16 to 30 years or an average of 18.6 years for both barangays. The La Trinidad Socio-Economic Development Profile (2007) revealed

that such observations are also consistent with factors in population, land ownership and activities in social, economic and ecological development in the municipality.

In addition, homeownership of local residents as owners, renting and or caretakers shows significant difference between Betag and Puguis barangays with 55.33% and 56.67%, respectively. Compared to renting with 42 % and 39.33% and as caretaker of houses in Betag (4 or 2.67%) and Puguis (6 or 4%) barangays.

Data Collection, Analysis and Interpretation

Pertinent quantitative research data were gathered, tallied, classified, tabulated and subjected to statistical analysis and interpretation. Simple frequency count, percentages, means, and ranking were used to describe the research data which were presented as tables and figures. The research information was further discussed through the observations and testimonies of the respondents during validations and individual interviews.

RESULTS AND DISCUSSION

Agricultural land conversion is a challenging area of development study. It provides an interesting avenue for discussion especially if the results or findings are related to proper management of resources affecting the social, economic, and ecological development activities of a given area. Generally, it focuses on agricultural land conversion to other uses like commercial and industrial which is analyzed in the applied field of urban management.

Factors Affecting Agricultural Land Conversion

Barangays of Betag and Puguis identified several factors affecting the agricultural land conversion of La Trinidad. The barangays have different factor prioritization but with similar concerns. Generally, the social and economic factors have bearing in the management of the land resources which are considered to influence the direction of development and planning activities of the municipality.

Table 3. Factors affecting agricultural land conversion to other uses

FACTORS	BETAG		PUGUIS	
	WM	DE	WM	DE
Increasing population (family members increase; need to have better houses)	3.90	A	3.83	A
Community industrialization (more business establishments and activities)	3.86	A	3.81	A
Migration and people movements	3.55	A	3.56	A
Acquisition of lots for residential	3.67	A	3.87	A
Accessible transportation and feasible for commercial use	3.67	A	3.77	A
Housing project	3.29	U	3.51	A
No capital for agricultural activities	3.11	U	3.25	U
Minimal return of investment in Agriculture	3.54	A	3.45	U
Lack of interest and motivation in agricultural work and activities	3.35	U	3.07	U
Agricultural activities require high capital of inputs	3.56	A	3.42	U

Table 3. Continued . . .

FACTORS	<u>BETAG</u>		<u>PUGUIS</u>	
	WM	DE	WM	DE
Unstable prices of agricultural products	3.66	A	3.70	A
Poor support for farmers from government and other agencies in agricultural development	3.80	A	3.77	A
People prefer other work activities than farming	3.75	A	3.75	A
Land owners need money badly	3.65	A	3.52	A
Grand Mean	3.60	A	3.59	A

Legend:

<u>Numerical Values</u>	<u>Weighted Mean (WM)</u>	<u>Descriptive Equivalent (DE)</u>
5	4.50 – 5.00	Strongly Agree (SA)
4	3.50 – 4.49	Agree (A)
3	2.50 – 3.49	Uncertain (U)
2	1.50 – 2.49	Disagree (D)
1	1.00 – 1.49	Strongly Disagree (SD)

In Barangay Betag, the increasing population affects the land conversion in the area. This is very supported by the NSO Census of 2007 report that Barangay Betag is the highest most populated area among the 16 barangays of La Trinidad with a total population of 6,235 on a 40 person per hectare ratio with 5 family members per household.

In addition, the population of Barangay Betag has an increasing trend. In 1996, it was 6, 108, in 2000 it was 7,526 with an increased of 1, 418 or an average of 300 persons per year from 1996 to 2000. However, there was a tremendous increase of 3, 523 or 400 persons per year from 2001 to 2008. Today, the barangay population is 11, 455 which affects the physical and economic condition of the barangay.

The 4.04% growth rate of La Trinidad influenced the population of the area due to high rate of in-migration and rising economic opportunities and spillover jobs in Baguio city (La Trinidad Physical and Socio-Economic Profile 2007). The new census in 2007 also shows that the growth rate increased to 5.3% and it expected to double by 2020. This finding is very alarming in terms of land use because there is a need for residential areas for the increasing population.

This a similar to the population growth rate that was observed in the Municipality of Lantapan, Bukidnon, wherein the annual population growth rate of this municipality is 4.26% from 1960 to 1995 which is higher than the Philippine average rate of 2.4%. This is attributed to the migration of ethnic groups people from coastal areas and other islands and the Cordillera (Rola et.al.1996) as cited by Coxhead and Buenavista (2001).

Furthermore, agricultural land conversion in Barangay Betag is affected by community industrialization. This is shown by the introduction

of institutions such as banks, schools, hotels and restaurants, hardware shops, vulcanizing and machine shops, computer shops and other establishments.

The establishment of these businesses and industries is related to the increasing population and the changes in land utilization and resource management in the barangay (Plate 1). These are directly related to the economic development of the barangay and the municipal in general. According to Governor Salceda (2008) during the 2008 National PHILARM Conference in Albay, the uncontrolled growing population of the country causes the shortage of rice. This argument relates to the decrease of rice production with increase population in rural areas (BAR Chronicle Volume 9 No. 4 2008).



Plate 1. One of the sari-sari stores in Barangay Betag (January 2010)

In another aspect, poor support services extended to farmers as provided by government agencies affect agricultural land conversion in the area. The identified support services are regulations on policies for agricultural product, viable information and technologies for agricultural production and provision and operation on irrigation systems. While the local government provides their best to support the local farmers in the area, still the respondents during the personal interview pointed out that they were not supported in their quest to stop vegetable importation over the local produce.

Another issue is the shortage of water supply during summer season as well as contamination of water irrigation for strawberry and vegetables that may affects the quality of products produced.

With the perennial occurrence of this concern, the respondents believed that businesses such as boarding houses, restaurants and hotels are the easy way for leaving which will cause agricultural land conversion for this purposes.

As a result, the Barangay Betag Council, La Trinidad Water District, Benguet State University, La Trinidad Municipal government and Benguet provincial government constructed the water treatment station at the middle of the Betag vegetable farms to treat the water coming from the

canals and residential areas so that it could be used in watering strawberries and vegetables (Plate 2).



Plate 2. The Water Treatment Station found in Barangay Betag vegetable and strawberry farms (March 27, 2010)

Furthermore, respondents in Barangay Betag pointed out that they are uncertain if the lack of interest and motivation (3.35) in agricultural activities affects the conversion of land because of the rise of building construction in the area including issues on minimal return of investment in agriculture (3.54) and or no capital for agricultural activities (3.11). However, it was noted that people prefer other work activities than farming

(3.75) which means that business opportunities in Barangay Betag causes an increase of businesses and face growth in population.

Also, the location of Barangay Betag post the fast-paced development in relation to agricultural development because it is near the national highway, Benguet State University, Benguet General Hospital, and other regional and provincial offices like the Department of Science and Technology, Commission on Audit where people work. As observed, majority of the people working in these institutions have residents in Barangay Betag which is related to the increasing population and the construction of residential areas which lead to the intrusion and conversion of the agricultural lands to other uses.

By contrast, Barangay Puguis shows that agricultural land conversion was more prevalent in the area. Respondents have identified more significant factors related to other uses. The factor on the acquisition of lots for residential area was pointed out by the respondents considering that the barangay is also an agricultural area with a weighted mean of 3.87.

Based on the follow-up interview and observations, the residents are not originally from the place. They are from other municipalities and nearby provinces who acquired their residential area by purchasing them.



Plate 3. Palmaville Subdivision in Puguis (February 2010)

A very visible manifestation is the establishment of the Palmaville Subdivision which was originally a productive agricultural land area in the barangay (Plate 3). This was converted to a residential subdivision per Sangguniang Bayan Resolution No. 8-96, dated January 26, 1996.

Aside from this, there were four (4) subdivision projects originally agricultural but converted to other uses through Sangguniang Bayan (SB) Resolutions in 1996. Out of the six (6) applications filed in the Sangguniang Bayan within 1995 to 2005 for reclassification from agricultural to other uses, only one (1) was denied because it was found out to be still profitable for agricultural use as per SB Committee report.

The total area of the converted/reclassified agricultural lands into residential areas through SB Resolutions was 61, 144 square meters.

Other observation pointed out by the respondents is the original agricultural land was subdivided into smaller areas which became commercial or business areas like gasoline station and the Palmaville Vegetable Trading Post (Plate 4).

This is the reason why there was a construction of concrete road traversing Barangay Puguis and Barangay Betag (Plate 5). This is also supported by the factor on accessibility of transportation and feasible for commercial use. People can just drive in and go around the barangay because of the prevalence of public utility vehicles traversing the routes Baguio to Puguis or Baguio-Motorpool (Buyagan) and vice versa.



Plate 4. Palmaville Vegetable Trading Post in Barangay Puguis (February 2010)



Plate 5. Concrete Road traversing Barangays Betag and Puguis (February 2010)

On the other hand, Barangay Puguis respondents pointed out that they are uncertain there is minimal return of investment in agriculture (3.45) which is also supported by factors like lack of interest and motivation in agriculture (3.07), no capital for agricultural activities (3.25), and agricultural activities requires high capital of inputs (3.42).

Furthermore, Barangay Puguis respondents agreed that poor support for farmers from government and other agencies in agricultural

development affects land conversion (3.77) in the area including unstable prices of agricultural products sold (3.70).

Compared to Barangay Betag, respondents in Barangay Puguis agreed that the community industrialization (more business establishments in the area) affects faster land conversion (3.81) because local residents convert the area and construct buildings for economic reasons like apartments and boarding houses (Plate 6) of other people working in the municipality of La Trinidad and Baguio City and also gasoline station serving the local residents and other people (Plate 7).



Plate 6. New houses constructed in Puguis (February 2010)



Plate 7. Gasoline station in Barangay Puguis (January 2010)

One critical insight gathered in both barangay is the purchasing and selling of agricultural lands for other uses. Barangay Puguis agricultural lands are purchased in interior areas close to the boundaries of Barangay Poblacion-Buyagan and Longlong. Likewise, private agricultural lands in Barangay Betag is being sold also and converted to residential and business establishments that further decreases productive areas.

These identified responses are believed to have direct and indirect effects in terms of land conversion to other uses. Land identified for specific use must be followed in order that it will have its potential use that supports the social and economic development of residents. Local

government officials and other agencies should develop and prepare plans and programs and policies for the community as well as to utilize and provide the necessary resources needed to the improvement and sustainability of services to further enhance the development of the area. If these were done properly, agricultural land conversion especially in La Trinidad will be minimized vis-à-vis the increasing population and other activities outside of agricultural-related development activities because overall, La Trinidad is still considered as agricultural area.

Extent of Agricultural Land Conversion

Over the years, the condition of the natural landscape in La Trinidad has been observed to be changing very fast. Mountains are flattened to establish subdivisions, and trees are cut down to give spaces for commercial buildings and residential houses.

Residential houses In Barangays Betag and Puguis, number of residential houses and other buildings constructed within and close to the agricultural lands has enormously increased (Table 4).

Table 4. Number of Residential houses constructed from 1991 to 2008 in Betag and Puguis, with the corresponding areas occupied as per data from La Trinidad Municipal Engineering Office

BARANGAY AND YEAR	NUMBER	AREA OCCUPIED (m ²)			TOTAL
		Smallest House (SH)	Largest House (LH)	Average House (SH+LH)/2	
<u>Betag:</u>					
1991 – 1992	10	30	503	266.5	1,377
1993 – 1995	29	20	509	264.5	3,750
1996 – 1998	18	30	402	216.0	2,393
1999 – 2001	45	21	424	222.5	6,960
2002 – 2004	27	60	666	363.0	5,187
2005 – 2007	42	27	454	240.5	7,261
2008	1	0	0	137	137
Sub-Total	172	188	2,958	1,710	27,065
<u>Puguis:</u>					
1991 – 1992	9	52	131	91.5	798
1993 – 1995	27	30	413	221.5	2,987
1996 – 1998	30	72	1,368	720.0	5,654
1999 – 2001	99	40	302	153.0	6,977
2002 – 2004	44	14	360	187.0	6,961
2005 – 2007	62	25	378	201.5	10,579
2008	9	74	456	265.0	1,799
Sub-Total	280	287	3,408	1,839.5	35,755
Grand Total	452	475	6,366	3,549.5	62,820

In Barangay Betag, there were 172 residential houses constructed from 1991 to 2008, occupying a total area of 27,065 square meters. This gives an average of 10 houses constructed per year with an average area of 1,592 square meters. The highest increase was recorded in 1999 to 2001; there were 46 houses constructed with total area of 6,960 square meters. The least number was recorded in 2008; only one house was constructed. The land area of the residential houses ranges from 20 to 666 square meters, with an average area of 157.35 square meters per house. This rate of houses construction will continue to reduce agricultural lands of Betag if it will not be stopped.

Majority of Barangay Betag respondents reported that the lots where they constructed their houses were originally agricultural lands (Plate 8). They further reported that they bought their lots. Some respondents pointed out that it is better to construct their residential houses than continuously renting which are too costly in the long run.

In Barangay Puguis, there were 280 houses constructed from 1991-2008, occupying a total area of 35,755 square meters. This is far more than the number of and area occupied by houses constructed within the period covered by this study in Betag. The computed average number of houses constructed within the covered period is 16.47 per year, and the

average area is 2,103.24 square meters per year; also far more than that in Betag.



Plate 8. Newly constructed buildings in Barangay Betag within the original agricultural lands (January 2010)

The area occupied by the constructed houses ranges from 14 square meters to 1,368 square meters, the average area occupied by each houses is 127.7 square meters, much smaller than the average area occupied in Betag (Plate 9). The very small areas are presumed to be of those constructed extension for small business purposes like selling certain products, sari-sari store, and tailor shop. The rest may have been just rushly erected to support their application of electrical and water connection.



Plate 9. Constructed residential houses in Puguis (February 2010)

As shown in the Table from 1991 to 2008, or in a span of 17 years, the total houses constructed in Barangays of Betag and Puguis was 452, with a total land area of 62,820 square meters. This gives an average of 26.59 houses constructed per year with aggregate average area of 3,695.29 square meters.

Non-residential buildings. The buildings constructed for commercial and industrial purposes in Betag and Puguis barangays from 1991 to 2008 were significant increased (Table 5).

Table 5. Number of commercial/Industrial buildings constructed in Betag and Puguis, with the corresponding areas occupied as per data from La Trinidad Municipal Engineering Office

BARANGAY AND YEAR	NUMBER	AREA OCCUPIED (m ²)			TOTAL
		Smallest House (SH)	Largest House (LH)	Average House (SH+LH)/2	
<u>Betag:</u>					
1991 – 1992	4	15	1,022	518.5	1,215
1993 – 1995	8	96	1,482	789	3,544
1996 – 1998	7	72	1,644	858	3,411
1999 – 2001	12	18	595	306.5	3,066
2002 – 2004	4	110	523	316.5	1,258
2005 – 2007	18	28	540	284	4,380
2008	2	119	948	533.5	1,067
Sub. Total	55	458	6,754	3,606	17,941
<u>Puguis:</u>					
1991 – 1992	1	0	0	180	180
1993 – 1995	4	192	1,015	603.5	1,619
1996 – 1998	5	137	354	245.5	1,021
1999 – 2001	10	12	1,121	566.5	3,332
2002 – 2004	5	36	2,396	1,216	2,396
2005 – 2007	16	46	1,076	561	4,210
2008	0	0	0	0	0
Sub. Total	41	423	5,962	1,839.5	12,758
Total	96	881	12,716	5,445.5	30,699

A total of 96 commercial/industrial buildings were constructed in both barangays from 1991 to 2008, occupying a total land area of 30,519 square meters. This gives an average of 5.65 commercial/industrial buildings constructed per year at an average area of 1,805.82 square meters. A much greater area is occupied by said buildings in Betag than in Puguis, the reverse in terms of residential houses constructed where Puguis has significantly more than Betag.

Betag has 55 constructed business/industrial buildings from 1991 to 2008 occupying with a total area of 17,941 square meters. The largest occupies an area of 1,644 square meters, and was constructed in 1996 to 1998. The next largest occupies an area of 1,482 square meters; this was constructed in 1993 to 1994. The smallest occupies an area of just 15 square meters, constructed in 1991 to 1992, the next smallest is 18 square meters constructed in 1999 to 2001, followed by 28 square meters house which was constructed between 2005 to 2007.

For Puguis, there were 41 commercial/industrial buildings constructed from 1991 to 2008, occupying a total of 12,758 square meters; an average of 2.4 buildings constructed per year, occupying an average area of 750.47 square meters. The size range from 12 square meters to 2,396 square meters. The largest has an area of 3,332 square meters and constructed in 1999 to 2001 while the smallest was only 12

square meters and constructed in 1991 to 2001. There was no construction in 2008.

Residential and commercial buildings. There were 548 residential and commercial buildings constructed in barangays Betag and Puguis from 1991 to 2008, occupying a total land area of 93,519 square meters (Table 6). This area represented 0.79% of the area of both barangays.

A total area of 45,006 square meters was occupied by the buildings built in Barangay Betag from the covered period of 17 years. This represents 2.87% of the barangay's land area. On the other hand, a little bit bigger area occupied by buildings constructed within the covered period in Barangay Puguis, 48,513 square meters. This represents 0.47 % of the barangay's land area. The much larger area of Puguis allows or accommodates more buildings construction than Betag.

The considerable extent of land conversion in the two barangays is mainly attributed to the enormous vegetable trading and business major educational institutions that draws people to the place. These areas affected were originally agricultural lands that were productive but converted to other uses, especially to business establishments, because of the associated increase of return of investment and other related business opportunities.

Table 6. Residential and commercial buildings constructed in Betag and Puguis from 1991 to 2008.

Barangay	Number			Area (sq. m.)		
	Res.	Comm'l	Total	Res.	Comm'l	Total
Betag	172	55	227	27,065	17,941	45,006
Puguis	280	41	321	35,755	12,758	48,513
Total	452	96	548	62,820	30,699	93,519

Effects of Agricultural Land Conversion

The agricultural land conversion in the municipality of La Trinidad, particularly in barangays Betag and Puguis, have created social, economic and environmental changes. These effects have both positive or beneficial and negative or detrimental effects.

Social Effects

The social effects of agricultural land conversion in La Trinidad as perceived by respondents are shown in Table 8. Ranked as the number one effects by respondents in both barangays Betag and Puguis are more health problems, crimes and increasing traffic problems. These problems are seen as consequences of population increase. The reported population growth of both barangays, combined is 4.04%. The presence of various institutions such as banks, schools, public markets and trading posts in La Trinidad are significant drawers of people to the place.

Table 7. Social effects of agricultural land conversion as perceived and rank by respondents.

SOCIAL EFFECTS	BETAG		PUGUIS	
	Mean	Rank	Mean	Rank
More health problems, more crimes, and increase traffic problems	2.17	1	1.88	1
Agricultural activities lessened; business activities increased	3.34	4.5	3.45	4.5
Community cohesiveness reduced/lessened	3.05	2	3.18	3
Promotes availability of social services (markets, education, health & recreation)	3.07	3	2.88	2

Ranked second by respondents in Betag was the lost or reduction of community cohesiveness or belongingness. This trend was commonly observed to occur in the process of urbanization wherein kinship ties are replaced with formal relationships. For Barangay Puguis respondents, the ranked as second a positive effect, the promotion of social services such as markets, education, health, and recreation. Such services are established in response to felt demands from increasing number of people. The respondents from Betag ranked positive effect as third; their ranked second, which was ranked third in Puguis is the decreased in community cohesiveness.

Due to the growing population, congestion is becoming a serious problem, especially in Barangay Betag. There are no access roads, only pathways in the interior part of Betag to deliver basic support services. Consequently, health and sanitation is becoming a serious social concern. Decreasing agricultural production activities and increasing business activities were ranked fourth by respondents from both barangays.

In Barangay Puguis, there is lesser effect of the agricultural land conversion because it has much bigger area than Betag. However, it was reported that big lots were already subdivided to the children of original land owners and or old to buyers. The opening of the Palmaville

Subdivision as a trading center is a manifestation of growing number of people in the area that changes the social environment. Community people's cohesiveness and belongingness is observed by respondents to have changed, and business relationships are evolving. These observed changes requires the local residents to adjust to their regular activities and seek new work outside agriculture or to other agriculture-related activities like selling or trading of goods. Local residents observed that those involved in agricultural production activities is decreasing while those involved in selling, processing, food servicing, and the like are increasing.

Specifically, Barangay Puguis respondents believed that availability of social services like markets, education, health and recreation is more of a positive effect because they created employment and livelihood. However, sanitation is becoming a problem, and due to increased vehicles traversing regularly in the area, air and noise pollutions are felt.

Economic Effects

The perceived economic effect of agricultural land conversion in barangay Betag and Puguis is shown in Tale 8 mainly observed by the respondents as to the economic effects are related to the increase of business activities and the profitability of house rentals.

Table 8. Economic effects of agricultural land conversion

ECONOMIC EFFECTS	Betag		Puguis	
	Mean	Rank	Mean	Rank
More business activities	2.50	1	2.40	1
Housing projects are better source of income, (rental); increase income	2.91	2	2.78	2
Increase land valuation & market value	3.05	3	2.98	3

Barangays Betag and Puguis are both accessible to transportation, and are close to schools, government and private offices, automobile shops, computer shops ,etc. People operating, and/or clients of these establishments needs boarding houses or residential areas to settle. Thus conversion of the agricultural lands to accommodate the resultant increasing demands is inevitable.

The respondents reported that housing projects like building houses for board and lodging is increasing as source of income. Consequently, land value enormously increases. Bothe situation make agricultural production a less practical economic activity. A case to mention is that of Engineer Angelito Palma who converted his agricultural lot into a subdivision, the Palmaville Subdivision which is doubtlessly ushering him profit levels unmatched by agricultural production in the area.

These business opportunities have helped both barangays economically stable and relevant to the whole development of the municipality.

Furthermore, Barangay Puguis is now becoming a center of business activities because of its accessibility to the Longlong – Tamawan road and Pico-Puguis – Buyagan road that are both conducive to business establishments and residential houses.

Once an agricultural land is converted to residential or commercial, the valuation and market value of its zone will increase, together with the market and assessed value of the land. This will tempt land owners to convert their lands to residential or commercial use, especially if for loan purposes, because it has a higher appraised value. This benefit was affirmed by the zoning officer of the Municipal Planning and Development Coordination (MPDC) of Dasmariñas, Cavite, Mr. Moises Menguito, who reported that commercial and residential lands are more profitable compared to agricultural lands (<http://www.abs-cbnnews.com/special-report/04/14/08/lgus-power-reclassify-land-helps-landowners-evade-carp>).

Environmental Effects

Table 9 shows the environmental effects of land conversion as observed by respondents from Barangay Betag and Puguis. The respondents noted that agricultural land conversion tremendously affects the natural resources of the two barangays. In Barangay Betag, the major environmental effect associated with agricultural land conversion is the contamination of water supply and air which directly affect residents, business and even agricultural activities.

The respondents also claimed that agricultural lands adjacent to residential and commercial buildings become unproductive because of water contamination coming for these buildings.

Table 9. Environmental effects of agricultural land conversion

ENVIRONMENTAL EFFECTS	BETAG		PUGUIS	
	Mean	Rank	Mean	Rank
Climate effect like “extreme temperature/weather condition”	3.26	4	2.85	1
Contamination of water supply and air	2.84	1	2.99	4
Increased garbage/wastes	2.93	2	2.89	2
Noise pollution	2.87	3	2.96	3

As a result, there is a need to construct water treatment plant in the strawberry farm in Betag to be used by farmers. The next major environmental impact is increased garbage/wastes that also contaminate soil, water and air. This effect forced the Local Government of La Trinidad to construct additional dumpsite facility at Barangay Alno to augment the original dumpsite at Barangay Buyagan.

By contrast, respondents from Barangay Puguis ranked first climate change like extreme temperature/weather condition as the major effect of agricultural land conversion. Many respondents viewed that the unpredictable weather conditions that endangered many residents near the mountain slopes in La Trinidad last October 2009, especially in Little Kibungan in Barangay Puguis which is a collective effect of global land conversion leading to excessive loss of natural vegetative cover.

Noise pollution is another identified result of agricultural land conversion. Both Barangays Betag and Puguis residents pointed out that they were affected by noise pollution from “karaoke bars” and vehicles traversing the major roads.

So as not to further aggravate the enormous domestic and industrial pollution in the area, the Municipal Agriculture Office, with the assistance of the Department of Agriculture is promoting organic farming

or good agricultural practices in Barangay Betag vegetable and strawberry farms. Some farmers as pessimistic of said practices, perceiving that it is very difficult to follow because of the excessive use of pesticide and inorganic fertilizers that almost permanently damaged the soil condition in the area; they also perceived that it is difficult to purchase and or prepare compost as fertilizers (La Trinidad Comprehensive Land Use Plan 2000 – 2010). Changing farmers' agricultural practices entails intensive training and reorienting farmers on proper resource and waste management, and providing technical and practical assistance.

Solutions to Minimize Agricultural Land Conversion and its adverse effects

Because of the serious adverse effects or consequences of agricultural land conversion in barangays Betag and Puguis as identified in the previous section such as environmental pollution, health problems, and reduced agricultural production, the local government of La Trinidad and Betag and Puguis need to implement mitigation measures. Table 10 shows suggestions to minimize agricultural land conversion and its adverse impact.

Table 10. Solutions/suggestions by respondents to minimize agricultural land conversion and its adverse effects in La Trinidad, Benguet

SOLUTIONS	BETAG		PUGUIS	
	Mean	Rank	Mean	Rank
Improve and reinforce population management programs	4.15	4	4.19	4
Create non-agricultural employment opportunities	5.30	7	5.27	7
Improve the fertility of agricultural lands through trainings on intensive and organic/sustainable agriculture	3.74	1	3.66	2
Promote sustainable Agriculture through modernized Irrigation system	4.14	3	3.61	1
Strictly enforce properly the rules and regulations on agricultural land conversion and promote and diversify agri-based livelihood like wine production, and other agricultural products processing	4.65	6	4.75	6
Promote cooperativism among farmers and businesses groups or entities	4.48	5	3.83	3
Minimize or promote zero Waste management goal	5.42	8	5.51	8
Encourage government and private funding agencies to support and strengthen research and extension activities	3.97	2	4.58	5

The solutions to minimize agricultural land conversion to other uses are focused on promoting sustainable/ecological/organic agriculture through improvement of soil fertility to be ranked number one by Betag respondents and ranked number two by Puguis respondents. The issue on soil fertility can be restored through trainings on intensive and organic/sustainable agriculture by providing the necessary support to agricultural production systems like pest control management, proper use of agricultural chemicals toward optimizing productivity to increase farmers income and minimize environmental damage.

For Barangay Puguis respondents, their ranked number one is on irrigation system modernization which is ranked third by Betag respondents. As it was mentioned in the previous section that water in the area is a problem that needs more irrigation and construction of additional deep wells, although a water treatment station was constructed in Betag but according to the respondents, it is not enough so they suggest that an additional facility be put up.

On the other hand, Barangay Betag respondents pointed out that there is a need to encourage government and private funding agencies to support and strengthen research and extension activities ranked as number 2 and ranked number five by Puguis respondents. Some funding agencies are giving financial assistance to farmers for agricultural used, there are

several banking institutions in the locality extending financial assistance. Some of these are rural, commercial and development banks. However, only rural and development banks are offering agricultural loans. Most of the commercial banks do not grant agricultural loans because according to them, farming is very risky.

The rural and development banks servicing the locality are Kapangan Rural Bank, Trinidad Rural Bank, Rosbank and Cooperative Bank of Benguet and Development Bank of the Philippines. Based on interviews conducted with these banks, an average of PhP 50,000.00 is provided as agricultural loan to farmers for different agricultural commodities like cutflowers and vegetables. Rose Bank has at least loan provided to farmers in the amount of PhP 40,000.00.

Likewise, Kapangan Rural Bank and Land Bank respectively disbursed an estimated total amount of PhP 8 million for agricultural loans. The Rural Bank of La Trinidad grants agricultural loans as high as PhP100,000.00. Generally, these banks require farmers/ borrowers to submit a project feasibility study duly signed by a Certified Public Accountant, in addition to other collaterals like land titles and or tax declarations of property before the agricultural loans are released. These reasons made Puguis respondents ranked as number five.

To minimize or promote zero waste management, goal is ranked number eight by barangays Betag and Puguis respondents. This entails that there is a need for the local government to conduct more information drive, educational and technical trainings on proper waste management.

Implications to Urban Development and Management

Land use conversion in the context of this study refers to the act or process of changing current physical use of agricultural lands into other uses. It has long been recognized as inevitable to the country's march towards urbanization and industrialization. It involves different stakeholders such as the government, the private developers, the landowners, and the tenants in the process, whose varied interests, actions, and expectations usually differ greatly from each other. The issue is how to regulate land use conversion to favor majority of the stakeholders (Chun Yu Wang, 2008).

At the onset of research conceptualization and preparation, the study had identified several factors influencing the agricultural land conversion. However, it was not clear whether these perceived factors such as increasing population, rate of building constructions and its effects to social, economic and environmental are contributing or limiting

agricultural land conversions because there are other data that directly affect the condition of the area. These were either viewed or observed by key players and stakeholders involved in the study of land conversions or even users based on their effects and impacts.

Specifically, an improved research framework showing the underlying factors and effects of land conversion studied which were interrelated to show the direction and effects of and problems identified in agricultural land conversion to other uses. These effects of agricultural land conversions were dealt with individually and analyzed comprehensively along social, economic and ecological changes with a span of 18 years or covering the period from year 1990-2008, which was the time when the La Trinidad Comprehensive Development Plans were prepared, implemented and completed.

The agricultural land conversion analysis utilized and adopted the introduced analytical framework on agricultural development vis-à-vis productivity and resource management by Schultz (1964) as cited by Crosson (1970) and community development by Bonifacio and Aquino (2006), and Balisacan (2006).

The analytical framework focuses on the development trends of a particular community, which is predominantly agriculture in nature and whose main source of livelihood is agriculture-based. Also, it views the

process of development and management through resource utilization and the internal and external changes caused by the changes of natural landscape or land conversions. It specifically considers technological changes employed from social and economic perspectives and ecological and political perspectives because of the common resource used-the land.

The study focused on the physical, social and economic conditions of La Trinidad, Benguet particularly on the two important agriculture-based barangays of Betag and Puguis. These barangays were compared and integrated in areas of complementation and collaborative development along the social, economic, and ecological aspects.

Figure 8 is the developed research framework showing the different influencing factors which were interrelated for further analysis in relation to the agricultural land conversion process in La Trinidad, Benguet. Also, this is shown to be used and further improved in studying rural-urban planning and management in similar conditions.

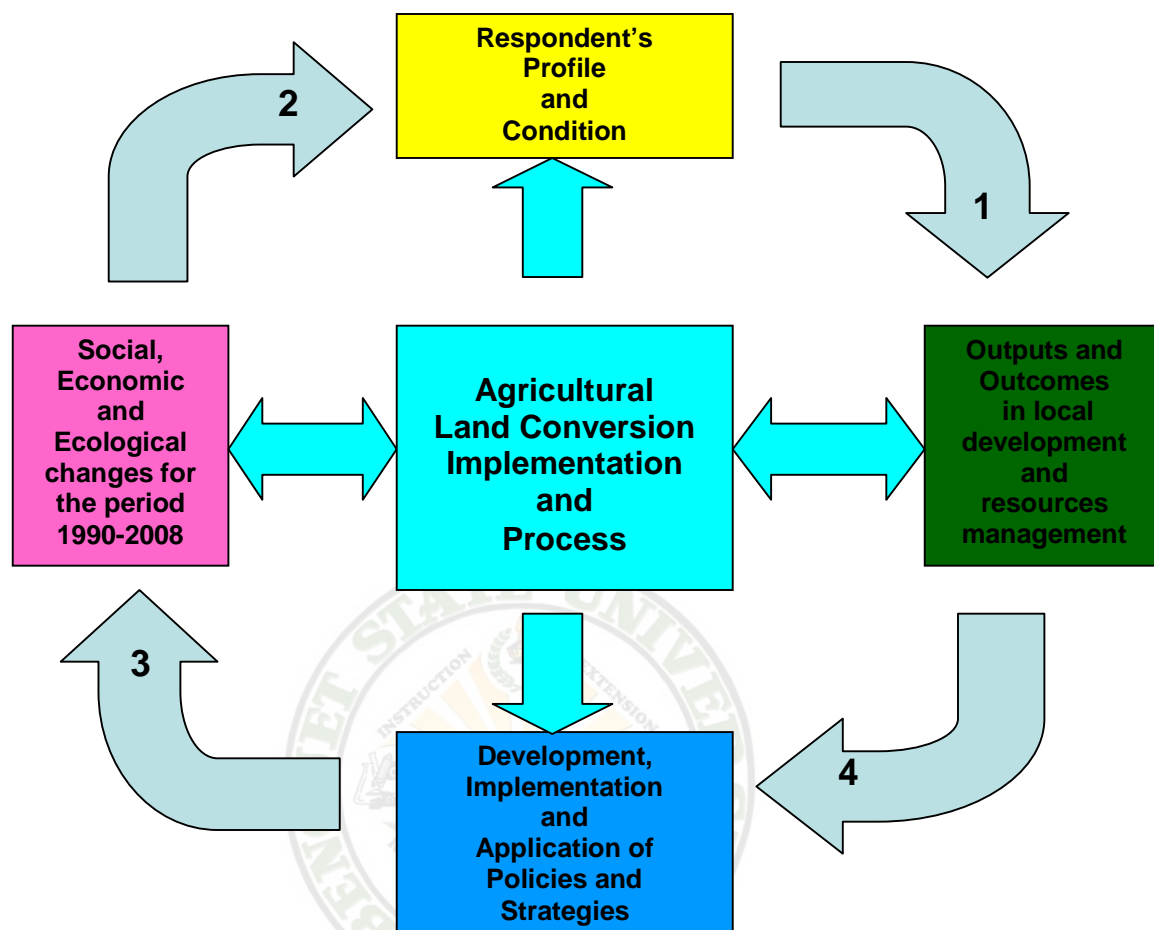


Figure 3. Improved framework showing the different influencing factors affecting the agricultural land conversion process in La Trinidad, Benguet from 1990 to 2008.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The study analyzed the factors and effects of agricultural land conversion in La Trinidad, Benguet, specifically in Betag and in Puguis. The data needed were gathered from 150 respondents per barangay from April to September 2009 with the use of questionnaires, complimented by information gathered via personal interviews, and from reports from the Municipal Engineering Office of La Trinidad.

The respondents consists of 16 Government Employees (agricultural technicians, barangay officials and kagawads), 82 professionals (doctors, nurses, engineers, teachers, lawyers), 68 business related (business managers, operators, store owners), 112 agriculture-related (farmers and traders), 22 others (students, drivers, homeowners). Frequency counts, weighted mean, ranking and averaging were used to analyze the data.

Focused on land use conversion, this study sought the answer to the following questions: (1) What are the factors affecting agricultural land conversion to other uses in La Trinidad, Benguet?; (2) What is the rate of land conversion from agricultural to residential and commercial or industrial purposes?; (3) What are the social, economic, and environmental effects of land conversion?; (4) What are the recommended

solutions to minimize the agricultural land conversion to other uses and its adverse consequences?

Findings

1. The greatest factors affecting agricultural land conversion to other uses in La Trinidad Benguet was due to the increasing population because of increasing of family members that needs more space for residential houses causes the fast diminishing of agricultural lands.

2. There were 548 residential and commercial buildings constructed in Barangays Betag and Puguis from 1991 to 2008, occupying a total area of 93,519 square meters or 0.79% of the land area of both barangays. This is equivalent to about 32 buildings constructed per year with an average area of 170.66 square meters per building. There were 321 buildings constructed in Puguis within the specified period, with a total area of 48,513 square meters which is equivalent to 0.47 % of the barangay's total land area. In Barangay Betag, 227 buildings were constructed with a total area of 45,006 square meters which is equivalent to 2.87% of the barangay's total land area. There were 452 residential buildings constructed, in barangays Betag and Puguis occupying an area

of 62,820 square meters, while commercial buildings were only 96 with 30,699 square meters area occupied.

3. The ranked number one social effects of agricultural conversion in Betag and in Puguis are more health problems, more crimes, and traffic problems due to the fast population increase. Ranked as second major effect by Barangay Betag respondents is the lost or reduction of community cohesiveness or belongingness which is commonly observed in urbanizing area. Barangay Puguis, the respondents ranked this effect as the third major effect, and ranked as the second major effect the promotion of availability of social services such as markets, education, health and recreation as a positive effect of agricultural land conversion which in turn ranked as third by Betag respondents.

Along economic aspect, both barangay's Betag and Puguis respondents view increasing business activities, more income and increasing land value as the major effects of agricultural land conversions. These effects are manifested by the 24 hour transportation services (e.g. taxi), establishment of private and government institutions, automobile shops, computer shops, etc.

The perceived environmental major effects of agricultural land conversion are contamination of water supply and air due mainly to garbage, domestic wastes and vehicular emission, and climatic change.

As a result, a water treatment plant in the strawberry farm in Betag was constructed to be used by farmers. The garbage problems forced the Local Government of La Trinidad to construct additional dumpsite facility at Barangay Alno to augment the original dumpsite at Barangay Wangal.

4. There is a significant difference on the perception of Betag and Puguis respondents as to the solutions to minimize agricultural land conversions and its adverse effects in La Trinidad Benguet. Betag respondents focused on the issue of improving the fertility of the soil for agricultural lands and establishments of more cooperatives and promotion of organic farming by providing the necessary support to increased farmers income. While Puguis respondents focused on the improvement/modernization of irrigation system to sustain agricultural activities.

Conclusions

In the light of the findings, the following conclusions were drawn:

1. Agricultural land conversions to other uses in Betag and Puguis La Trinidad Benguet was mainly attributed to the fast increasing population, through internal and in-migration. The fast-paced population increase indicates that Betag and Puguis are nice and strategic places to

stay for various businesses such as commerce, education, agriculture, tourism, etc.

2. The remaining agricultural lands in Betag and Puguis, especially those owned by private individual, will most likely to be converted sooner or later to residential and commercial/industrial buildings. La Trinidad will continue to become commercial/urban center. The proposed construction of a mall along KM 5 is a further manifestation of somewhat an express road to “City hood of La Trinidad.”

3. Agricultural land conversion has great social, economic, and environmental effects. It causes both economic progress with associated environmental and social pollution.

4. The severe deficit of water supply during summer in the two Barangays to sustain agricultural activities will force land owners to shift to a land use that provided them more viable income source.

Recommendations

In view of the foreseen transformation of La Trinidad into an urban center, the following are recommended:

1. The development plan of La Trinidad should be thoroughly reviewed to come-up with a well-defined environment-friendly

infrastructure development that support both landscape enhancement and preservation and further development of the strawberry-vegetable farms. Maintaining our identity as the “Strawberry Fields” of the Philippines promotes ecotourism that can sustain development, and proper planning and execution of plans, La Trinidad can become the hub of sustainable business and tourism destination in the Cordilleras.

2. In support to agricultural goals, DA, DAR and LGU should closely coordinate and collaborate to effectively implement the land conversion to avoid illegal or indiscriminate conversion of agricultural land to other uses, especially in Betag which was declared as Special Agricultural and Fisheries Development Zone (ZAFDZ). They should likewise promote sustainable/ecological/organic agriculture by strengthening agricultural research and extension; provision of a systematic trainings on intensive and organic sustainable agriculture; modernizing irrigation system; promoting diverse agri-based livelihoods such as fruit wine production, vegetable noodle processing, and other agricultural products processing; and establishing farmers’ agricultural cooperatives. The Department of Trade and Industry should strictly monitor and stop the illegal importation or smuggling of imported vegetables to protect our framers.

3. The barangay and municipal government units should fully implement the solid waste management Act of 2000 (R.A. 9003) and local

ordinances towards achieving the zero-waste goal. This entails organizing people and providing enough educational, technical, and financial support system.

4. Those barangays that are still considered as rural must be develop so that people will not migrate to the urbanizing barangays to avoid population explosion that will contribute to slum formation of the urbanizing barangays.



LITERATURE CITED

- ABALOS, G. 2009. Personal communication on agricultural land conversion in Betag.
- CROSSON , W. P. 1970. Agricultural development in Japan and other Asian countries. Prentice Hall. London. Pp 17-19.
- OMBION, K. G. 2008. Former Agriculture Chief Says Land Conversion Hurts Food Security. GMA News.tv/story 88133. Quezon City.
- BALISACAN, A. 2007. Agricultural Productivity Indicators. DA-BAR and SEARCA Project. Unpublished project report rt. SEAMEO-SEARCA, Los Banos, Laguna.
- BONIFACIO, M.F. and AQUINO, M.U. 2006 Agriculture and Fisheries Research and Development Trends in Technology Commercialization and Management. Paper presented during the 3rd National Technology Forum. Bureau of Agricultural Research, RDMIC Building, Visayas Avenue cor. Elliptical Road, Diliman, Quezon City.
- COXHEAD, I. and BUENAVISTA, G. 2001. Seeking Sustainability. Challenges of Agricultural Development and Environmental Management in a Philippine Watershed. Los Banos, Laguna, Philippines
- DE LOS SANTOS, F. 2009. Personal communication on land conversions and land use planning and management.
- GERMAN, M.,A. Administrative Orders and Executive Issuances in Implementing PD 27 and the CARL – RA 6657 from 1988 to 1994. Manila National Book Store Inc. Diliman Q.C.
- HLURB, (2001), Planning Strategically. Guidelines for the Application of the Strategic Planning Process in the Preparation of the Comprehensive Land Use Plan (CLUP) and to Important Urban Area Issues and Problems, Housing and Land Use Regulatory Board, Diliman, Quezon City, Metro Manila..

- HEALY, R.G. and ROSENBERG, J. S. 1979. Land Use and the States. Resources for the Future Inc. Baltimore, Maryland, USA.
- KACAYON, L. L. 2009. Strawberry OTOP in the Sustainability of Agri-Tourism Industry in La Trinidad, Benguet. Unpublished M.A. Thesis, UO, B.S.U. La Trinidad, Benguet.
- LANDO, R. 2009. Personal communication. Land Reclassification in La Trinidad.
- MEISTER, A. 1997. Development Project Management Study Guide 1 Reading 2, Massey University, Institute of Development Studies)
- TICBAEN, F. 2009. Personal communication. Agricultural land conversion in La Trinidad Benguet.
- UBALDO, V.C.A. 2009. Personal communication on urban management
- WANG, C., Y. 2008. Land Use Conversion in the City of Koronadal: A Multi-Perspective Analysis. Thesis and Dissertations.
- _____. COMPREHENSIVE LAND USE PLAN (CLUP), La Trinidad Benguet 2000 – 2010.
- _____. 2008. LA TRINIDAD PHYSICAL AND SOCIO-ECONOMIC PROFILE. La Trinidad Municipal Planning Development Office. La Trinidad, Benguet.
- _____. 1992. LOCAL GOVERNMENT CODE of 1991, Sec. 20. Manila. February 6, 1992.
- _____. 2010. The Baguio Midland Courier. Vol. LXII, No. 4 "LT's MOA for Mall ok'd" January 24, 2010.
- _____. The State of the Philippine Environment, IBON Foundations, Inc. Sta. Mesa, Manila, Philippines. 1997.
- _____. 2009. Magazine on Low External Input and Sustainable Agriculture, March 2009 Vol. 25 No.1)

_____ Municipal Planning and Development Office (MPDO), Engineering Office (Building Permits Issued from 1991 to 2008)

_____ 2008. Bureau of Agricultural Research (BAR) Chronicle, Department of Agriculture, Volume No. 9, Issue No.4. April 2008.

Worldwide Websites:

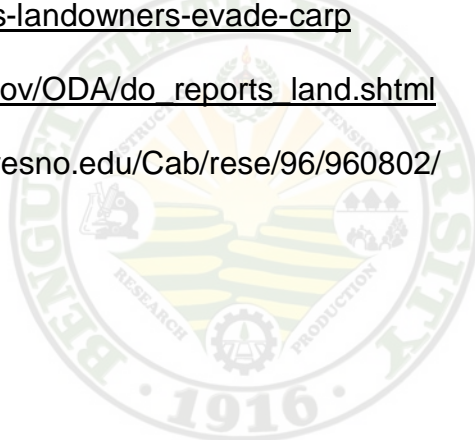
<http://www.agribusinessweek.com/>

[http://www.gmanews.tv/story/88133/Former-Agriculture-chief-says-land-conversion-hurts-food-security.](http://www.gmanews.tv/story/88133/Former-Agriculture-chief-says-land-conversion-hurts-food-security)

<http://www.abs-cbnnews.com/special-report/04/14/08/lgus-power-reclassify-land-helps-landowners-evade-carp>

http://egov.oregon.gov/ODA/do_reports_land.shtml

<http://www.cati.csufresno.edu/Cab/rese/96/960802/>



APPENDICES

Appendix A. Request Letter to OU Director to Conduct the Study

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

April 20, 2009

DR. LITA MOLITAS – COLTING
Director, Open University
La Trinidad Benguet

Dear Ma'am:

The undersigned is presently working on his thesis entitled "Analysis of Agricultural Land Conversion in La Trinidad Benguet" as a partial requirement for his Master in Urban Management.

In view of this, may I humbly request your good office to please allow me to float the questionnaires to my respondents.

Rest assured that all data gathered will be treated with utmost confidentiality and strictly for academic purposes only.

Very truly yours;

(Sgd) JOSE P. ATAYOC
Researcher

Recommending Approval:

Approved:

(Sgd) MARLOWE U. AQUINO, Ph.D.
Adviser

LITA MOLITAS-COLTING, Ph.D.
Director

Appendix B. Request Letter to Mayor Artemio Galwan to Conduct the Study

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

April 20, 2009

HON. ARTEMIO GALWAN
Municipal Mayor
La Trinidad, Benguet

Dear Mayor Galwan:

I am currently working on my master's thesis entitled "ANALYSIS OF AGRICULTURAL LAND CONVERSION IN LA TRINIDAD BENGUET" as a partial requirement for my Master in Urban Management.

In view of this, may I humbly request your good office to please allow me to float the questionnaires to the Municipal Officials, Barangay Officials of Betag and Puguis and the residents of the said two barangays.

Rest assured that all data gathered will be treated with utmost confidentiality and strictly for academic purposes only.

Thank you for your favorable response, more power and God bless.

Very Truly Yours,

(Sgd) JOSE P. ATAYOC
Researcher

Noted:

(Sgd) LITA MOLITAS - COLTING, Ph.D.
Director

Appendix C. Request Letter to La Trinidad Municipal Agriculture Office for
a Permit to Conduct the Study

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

April 13, 2009

MS. FELECITAS D. TICBA-EN
Municipal Agricultural Office
La Trinidad, Benguet

Dear Sir/Madam:

I am currently working on my master's thesis entitled "ANALYSIS OF AGRICULTURAL LAND CONVERSION IN LA TRINIDAD BENGUET", as a partial requirement for my Master in Urban Management.

In view of this, may I humbly request that I may be allowed to gather pertinent data related to agricultural land conversion to other uses as well as to conduct an interview to any key personnel in your department regarding agricultural land conversion.

Rest assured that all information gathered will be treated with utmost confidentiality and for academic purposes only.

Thank you for your favorable response, more power and God bless.

Very Truly Yours,

(Sgd) JOSE P. ATAYOC
Researcher

Noted:

(Sgd) LITA MOLITAS - COLTING, Ph.D.
Director

Appendix D. Letter to the Respondents

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

April 20, 2009

Dear Respondents:

The undersigned is presently working on his thesis entitled “Analysis of Agricultural Land Conversion in La Trinidad Benguet” as a partial requirement for his Master in Urban Management.

In view of this, may I humbly request your utmost cooperation and support by answering the attached questionnaires.

Rest assured that your answer will be treated with utmost confidentiality and strictly for academic purposes only.

God bless.

Very truly yours;

(Sgd) JOSE P. ATAYOC
Researcher

Noted:

(Sgd) LITA MOLITAS – COLTING
Director

Appendix E. Survey Questionnaire

Direction:

As part of the academic exercise in the completion of the master's research/special problem in Master of Urban Management, the attached survey questionnaire is prepared to obtain pertinent data in relation to the research entitled, Analysis of the Agricultural Land Conversion in La Trinidad, Benguet from 1991 to 2008.

Kindly answer each question based on your understanding and observations. Your responses will be treated with utmost confidentiality and will be solely used for academic purpose.

Thank you for your time and cooperation.

Part I. Personal Information

Name of respondent (Optional) _____

Age: _____ Sex: _____ Male _____ Female

Civil Status: _____ Married _____ Single

_____Widow(er)

Place of Birth: _____

Number of years in your Barangay? _____ in La Trinidad _____

Highest Educational attainment: _____

Occupation/Profession: _____

Sources of Income:

Main source of livelihood _____

Other sources of livelihood _____

Estimated monthly family income:

_____Php 10,000.00 – 15,000.00

_____Php 15,001.00 – 20,000.00

_____Php 20,001.00 – 25,000.00

_____Php 25,001.00 and above

Part II. Observations on Land Conversion

Do you own a house? _____ Yes _____ No

Are you renting? _____ Yes _____ No

What is your general observation of your barangay?

_____ agricultural landscape

_____ business area

_____ agriculture and business combined

_____ Others, please specify

What are the major changes in your area?

Year	Physical and Natural Changes (e.g. construction of bridges, landslide and erosions)

Part II. Factors affecting agricultural land conversion to other uses

Factors	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
Increasing population (family members increase; need to have better houses)					
Community industrialization (more business establishments and activities)					
Migration and community movements					
Acquisition of lots for residential					
Accessible transportation and feasible for commercial use					
Housing project					
No capital for agricultural activities					
Minimal return of investment in agriculture					
Lack of interest and motivation in agricultural work and activities					
Agricultural activities require high capital of inputs					
Unstable prices of agricultural products					
Poor support for farmers from government and other agencies in agricultural development					
People prefer other work activities than farming					
Land owners need money badly					
Others, please specify _____ _____ _____					

Part III. Effects of agricultural land conversion. Kindly rank according to importance and 1 being the highest in the following aspects:

Social aspects

- _____ More health problems, more crimes, food shortage, increase traffic problems
- _____ Agricultural activities lessened; business activities increased
- _____ Community cohesiveness reduced/lessened
- _____ Promote availability of social services (markets, education, health and recreation)

Economic aspects

- _____ More business activities
- _____ Housing projects are better source of income (Rental); increased income
- _____ Increase land valuation and market value.

Environmental aspects

- _____ Climate effect like extreme temperature/weather condition
- _____ Contamination of water supply and air
- _____ Increased garbage/wastes
- _____ Noise pollution

Part IV. Solutions/suggestions to minimize agricultural Land conversion and its adverse effects in La Trinidad, Benguet.

Kindly rank according to importance and 1 being the highest.

- _____ Improve and reinforce population management programs
- _____ Create non-agricultural employment opportunities.
- _____ Improve the fertility of agricultural lands through trainings on intensive and organics/sustainable agriculture.
- _____ Promote sustainable agriculture through modernized irrigation system.
- _____ Strictly enforce properly the rules and regulations on agricultural land conversion and promote and diversify agri-based livelihood like wine production, and other agricultural products processing.
- _____ Promote cooperativism among farmers and businesses groups or entities.
- _____ Minimize or promote zero waste management goal.
- _____ Support and encourage government and private funding agencies to support and strengthen research and extension activities.

BIOGRAPHICAL SKETCH

The researcher is a native of Kibungan Benguet. He was born on March 26, 1963 in Poblacion, Kibungan, Benguet. He finished his elementary education in 1980 at the Kibungan Central School and secondary education at the Kibungan National High School in 1984.



He pursued his higher education at the Baguio Central University where he obtained Associate in Geodetic Engineering in 1992 and finished his Bachelor of Science in Geodetic Engineering in the same institution in 1996 and passed the board examination in the same year.

After passing the Board examination, he worked as a temporary instructor at the Engineering Department, Baguio Central University for one year at the same time practicing as private surveyor.

With his humble knowledge and experience gained from his work, he applied as an instructor at Mountain Province State Polytechnic College, Engineering Department and is serving up to the present. To uplift himself technically, he applied for the master program in Urban

Management at the Open University, Benguet State University starting the first semester of 2005.

The researcher is happily married to Grace Basalong of Wangal, La Trinidad Benguet and blessed with three children, two girls and one boy. He and his family are now permanently residing at Upper Wangal La Trinidad Benguet.

Through his gained knowledge in urban management and development, the ideas, perspectives and experiences especially in conducting research will be shared as a teaching-learning experience to his students and colleagues at the Mountain Province State Polytechnic College – Tadian Campus.

