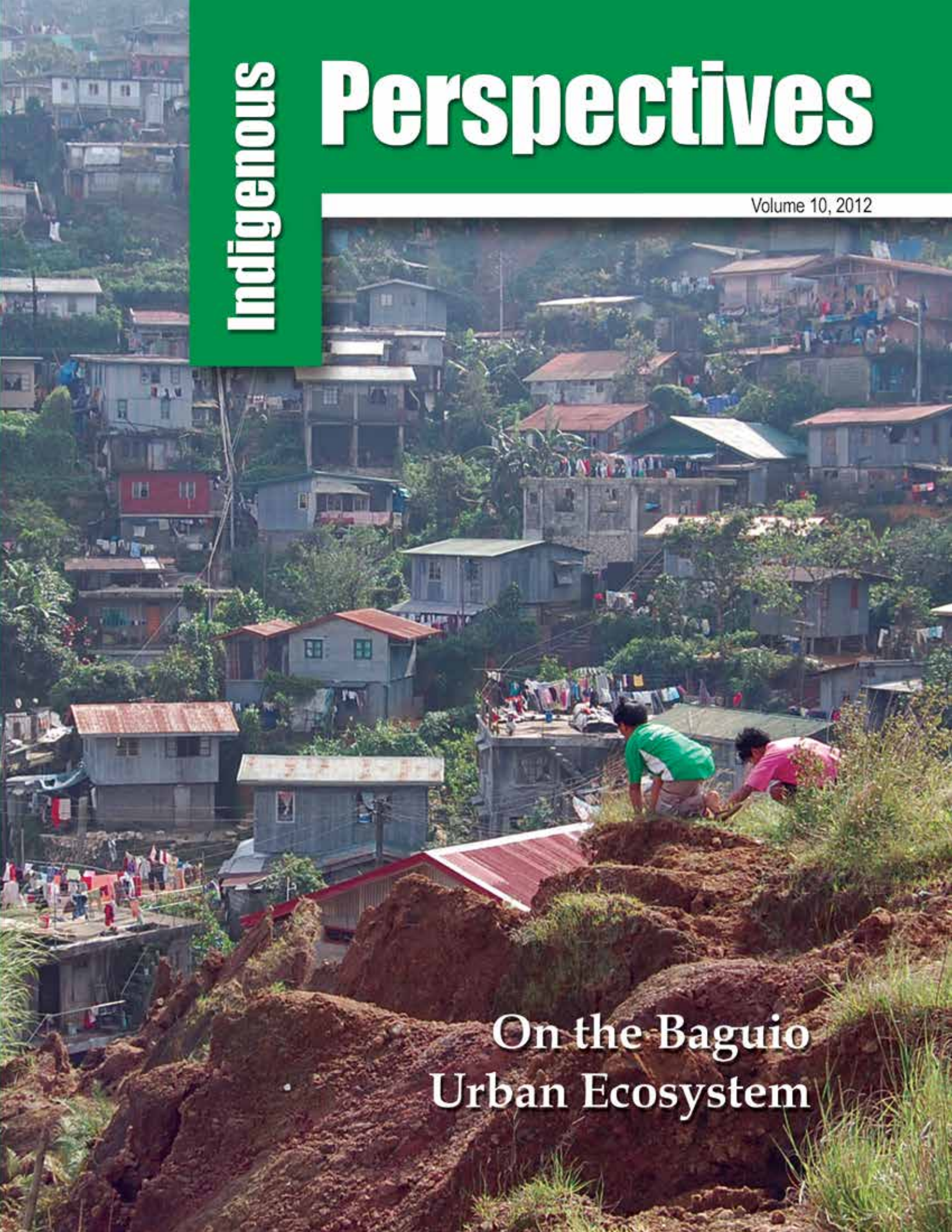




Indigenous

Perspectives

Volume 10, 2012

**On the Baguio
Urban Ecosystem**

Indigenous Perspectives

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A Journal of Tebtebba

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Table of Contents

	Page
Introduction	vii
 BAGUIO’S URBAN ECOSYSTEM: A SCOPING STUDY	 1
I. Introduction	1
Background of the Study	1
Objective of the Study	2
Methodology	3
II. Situationer	3
History	3
Baguio’s Urban Ecosystem	5
III. The Planning Process and Management of Baguio’s Urban Ecosystem	43
The Planning Process at the City Level	43
The Planning Process at the Community Level	45
Local Communities and the Management of Baguio’s Environment	46
Baguio’s indigenous Peoples and the Planning and Implementation of Environmental Plans and Policies	47
IV. Special Topic: Ibaloi Heritage Values	49
Role of the Ibaloi in the Development of Baguio	49
Baguio Old-Timers	50
Igorot Settlers	50
Baguio’s Local Government	50
The Baguio Ibaloi Struggle for Ancestral Lands	51
Ibaloi Unity	51
Lessons Learned	52
Way Forward	52
Regional Autonomy and Native Title	52
V. Conclusions and Recommendations	54
Summary of Findings and Analyses, Major Issues	54
Recommendations	55
Bibliography	56

	Page
WASTE MANAGEMENT IN THE URBAN ECOSYSTEM:	
THE CASE OF BAGUIO CITY AND THE MUNICIPALITY OF LA TRINIDAD	59
I. Background	59
II. Objectives of the Study	59
III. Methodology	60
The Study Areas	60
Data Collection	63
IV. Results and Discussion	64
Waste Management and the Ecosystem Approach	64
Waste Generation and Management Strategies in the Study Areas	65
Baguio City - Solid Waste Management	66
Baguio City - Liquid Waste Management	88
Municipality of La Trinidad - Solid Waste Management	92
Municipality of La Trinidad - Liquid Waste Management	114
V. Conclusion and Recommendations	116
Major Waste Management Issues	116
Potential Applications of the Ecosystem Approach	117
The Appropriate Scale of Application	117
Issues of Time	118
Bibliography	119
 ANNEXES	
Annex 1: First Baguio Environmental Declaration	123
Annex 2: Statement of the Baguio Citizens' No Waste Initiative	127
Annex 3: Writ of Kalikasan on the Irsan Dumpsite	129
 About the Author	142

Introduction

Baguio City in northern Philippines faces the same challenges as other cities of the world: growing populations, loss of green and open spaces, and problems in waste management. These issues have been brewing for many decades, but have recently been the focus of concern, as news of the six lives lost in the trash slide in the Irisan dumpsite, and the rallies to save a pinestand at a popular mall in the city, have gained media attention and landed in the front pages of the national papers.

Many Baguio residents are worried about the health of the Baguio urban ecosystem and the seemingly uncontrolled development in the city. They have expressed their concerns through the media, through statements, through rallies and mass actions. These actions have involved Baguio old-timers, the religious sector, the young and old, students and professionals, the urban poor, the activists and environmentalists, from all walks of life.

This volume of *Indigenous Perspectives* aims to provide an overview, facts and figures, and analysis of the Baguio urban ecosystem, to address gaps in our knowledge and provide a systematic and deeper understanding on the subject. We hope that this will be used by the growing number of citizens who are taking an interest in the health of city they live in.

Presented here are two important researches: the first, entitled “Baguio’s Urban Ecosystem: A Scoping Study,” provides an overview and situationer on the different components of the urban ecosystem. It also discusses heritage values of the indigenous Ibalois, the original inhabitants of Baguio, and the importance of the contributions of various stakeholders. The second, “Waste Management in the Urban Ecosystem: The Case of Baguio City and the Municipality of Trinidad,” zeroes in on the garbage problem, which is the critical issue confronting Baguio at present. These were done by Baguio-born and

-bred Maria Lorena C. Cleto, a young researcher who holds a masters degree in Urban and Regional Planning.

Annexed to these researches are the output documents of the First Baguio Environmental Summit on April 22, 2012, and the Workshop on Baguio Garbage, August 29, 2012. Also included is the Writ of Kalikasan* issued by the Court, August 10, 2012, on the closure of the Irisan Dumpsite.

The information provided here is hoped to help build the knowledge and capacities of Baguio residents to get involved and engage with local government in the management of the city, for the well-being of all who live here. This is also our small contribution to the ongoing global discourse on urban ecosystems around the world.

Judy Cariño

Traditional Knowledge Networker
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* A Writ of Kalikasan "is a legal remedy designed for the protection of one's constitutional right to a healthy environment." See What is a Writ of Kalikasan?, <http://suite101.com/article/what-is-writ-of-kalikasan-a310623#ix-zz2KeKk9bUg>, accessed 12 February 2013.

Baguio's Urban Ecosystem: A Scoping Study

By Maria Lorena C. Cleto with Joaquin K. Cariño



I. INTRODUCTION

Background of the Study

Baguio City, which could once be accurately described as a “nature city” and was designated as the Philippine summer capital for its cool climate and pine forests, is now reflective of urban sprawl and resource strain. The management of Baguio’s natural resources is also particularly complex because of several land management issues, chief of which include its status as a town site reservation and the presence of different and often conflicting ancestral land claims.

Mechanisms in Place to Manage Baguio’s Ecosystem

The local government of Baguio, as with other local government units (LGUs) in the Philippines, utilizes development plans as frameworks or guides for the development of its territory and management of its resources. These development plans are formulated based on a “desired future state” (Serote 2005) or Development Vision and goals for the city, the locality’s major roles in the larger planning area (province, region, country) and data on the existing situation or the state of the city’s natural, social, political, and economic environment.

Based on the above and, ideally, through a highly participatory process that involves consultations with different sectors of society, the LGU is mandated by the Local Government Code of 1991 (Republic Act 7160) to produce two comprehensive plans (Serote 2005):

First is the long-term physical framework plan, termed the Comprehensive Land Use Plan or CLUP, which describes the territory's desired urban form and, in line with this, the allowed location of various land uses. RA 7160 (Section 20c) states that CLUPs (enacted through zoning ordinances) are "the primary and dominant bases for the future use of land resources."

The second plan is the multisectoral Comprehensive Development Plan or CDP that Serote (2005) describes as the plan that outlines the LGU's sectoral and cross-sectoral strategies for promoting the general welfare of its citizens.

At the community level, barangays (village) are mandated to produce barangay development plans, which they submit to the City for integration in the City-level plans (HLURB 2006).

In the case of Baguio City, the last City Council-approved development plan was the 2002-2008 Comprehensive Land Use Plan. The City Planning and Development Office (CPDO) has produced a draft updated CLUP for the planning period 2010-2020. As of writing, said draft was pending approval by the City Council. The Baguio LGU has not produced a Comprehensive Development Plan; instead, sectoral policies, programs, and projects were included as parts of the CLUP.

Participation of Local Communities and Indigenous Peoples in Development Planning

Although recent years have seen increasing importance being given to meaningful public participation in the planning process, it is still common for development planning to be a top-down, consultant-driven exercise that is not well understood even among community leaders. Thus, it is relevant to ask whether or not local communities have a meaningful role in the official development process. Also, in areas such as Baguio, one must consider if indigenous peoples are given a voice in how the city's development proceeds. Is the importance of maintaining cultural diversity a factor in the development process alongside the preservation of the natural environment and the furthering of economic development?

The present study explored these issues while conducting a general survey of the present state of Baguio's urban ecosystem.

Objective of the study

To conduct a scoping research on the Baguio urban ecosystem, the output of which includes a situationer, analysis and recommendations on the status of the urban ecosystem of Metro Baguio, with focus on Ibaloi heritage values, community-based contributions to Baguio's development, and the participation of indigenous peoples in planning and implementation of environmental plans and policies

Methodology

The present study sought to fulfil the research objectives through case studies of three communities; namely, Barangay Loakan Proper, Barangay Loakan Liwanag, and Barangay West Quirino Hill in Baguio City. The study areas were chosen on the basis of the study's particular interest in Baguio's indigenous peoples—the two barangays in the Loakan Area of Baguio City are known to have retained their Ibaloi identity, while Barangay West Quirino Hill is one of Baguio's indigenous migrant communities. Key Informant Interviews were carried out with various community leaders from the study areas and also from leaders of Baguio's Ibaloi Community, in general. A representative of the Ibaloi community, Mr. Joaquin Cariño, contributed the chapter on Ibaloi heritage values and the role of Baguio Ibalois in local development.

Data Collection

The primary research method used was the Key Informant Interview. Among those interviewed were barangay officials and other community leaders in the three study areas and from Baguio's Ibaloi community, in general; and staff/personnel from Baguio's City Planning and Development Office, City Environment and Parks Management Office.

The following secondary research methods were also utilized before, during, and after collection of data in the study areas:

- Document review of relevant city- and community-level planning documents, and national planning guides;
- Document review of existing research, articles on, and documentation of the local development planning process; the local urban ecosystem; and the concerns of Baguio's indigenous peoples.

II. SITUATIONER

History

The Planning and Construction of Baguio as an American Colonial Hill Station

Baguio's metamorphosis from the Kafagway (original name of Baguio) of the indigenous peoples of Baguio into the Philippine "summer capital" commenced in the late 19th century, when American colonialists arrived and, enamored with what they described as "a wonderful region of pine parks" (Baguio, 1969 as cited in Reyes-Boquieren 1994), decided to set up camp in what was "presumed to be public land" (Hamada and Caoili 1992 as cited in Cleto 2007). This occupation would eventually have the effect of divesting identified primary landowners of their lands in order to supply the needs of a military reservation and a classic Colonial Hill Station (Bagamaspad and Hamada-Pawid 1985 as cited in Cleto 2007).

In 1900, two Taft Philippine Commission members, Dean C. Worcester and Luke E. Wright, were sent in to survey Kafagway/Baguio as a possible Colonial Hill Station (Bagamaspad and Hamada-Pawid 1985 as cited in Cleto 2007). According to Reed (1999, as cited in Cleto 2007), the layout and structure of colonial hill stations were usually based on models of existing parkland and settlement patterns in the metropole and were marked by the presence of formal and kitchen gardens, a marketplace, western architectural structures, bridle paths and trekking trails, artificial lakes, golf courses and athletic fields—all surrounded by cedar, eucalyptus and/or pine forests. True enough, these elements came to be present in Baguio City (Reed 1999, p. xxiv as cited in Cleto 2007), the traditional land use of which had once been dominated by green cover, grazing lands, rice fields, and “sparsely-distributed” Ibaloi residences (Reyes-Boquiren 1994).

The American planner and architect Daniel H. Burnham was commissioned to formulate the comprehensive urban design of the future city (Reed 1999 as cited in Cleto 2007). Millions of dollars were invested by the Insular government in the development of a road system in and leading to Baguio, as well as the construction of water, sewage, and electrical systems and substantial numbers of government office buildings and associated infrastructure. Additionally, significant numbers of residential and building plots of land were put up for public sale, and military reservations were designated for recreational and health developments. According to Reed (1999 as cited in Cleto 2007), these activities resulted in the establishment of Baguio’s foundations as a premier hill station and city by the early 20th century.

Reed (1999 as cited in Cleto 2007) writes that Burnham submitted the first plan of Baguio in 1905 to then-Secretary Taft. The city was designed with careful consideration of its mountainous terrain and projected role as a market center, heart of recreational activities, and summer capital. Burnham planned the city so that municipal, provincial, and national government complexes as well the major business area would be situated in proximity to one another and on relatively even ground so as to facilitate movement. The commercial district and government centers were constructed in the less-steeply sloped parts of what was then called the “Baguio meadow,” now known as the Burnham Park area (Reed 1999 as cited in Cleto 2007). A public park was also developed in the center of the Baguio meadow.

According to Reed (1999 as cited in Cleto 2007) Burnham’s plan for Baguio included a street system contoured after the hilly terrain, numerous public and private institutions, recreation areas, and expansive residential spaces. As well, there were provisions for an extensive army post composed of an armory, officers’ quarters, barracks, parade ground, service shops, hospital, and recreational facilities like a golf course and tennis courts. Also part of Burnham’s proposal plan was the executive mansion and a naval reservation. A wide lot was set aside for the Baguio Country Club, meant to cater to western businessmen, ranking civil servants and affluent Filipinos. For Filipinos of more moderate means, Burnham recommended the development of two major public parks and suggested that large parts of Baguio’s hills be designated as public property and maintained as informal parks with the careful preservation of their “cresting of green” (Burnham and Anderson as cited in Reed 1999).

It is noteworthy that Burnham strongly opposed dense settlement in Baguio, campaigned for the regulation of the city's expansion, and promoted stringent laws towards preserving the natural environment (Reed 1999 as cited in Cleto 2007). He had originally envisioned Baguio as a city populated by just 25,000 people (Burnham and Anderson 1905 as cited in Reyes-Boquiren 1994).

Unfortunately, Burnham's original plan, which was meant as a guide for the city's general line of development, was formulated in the absence of a formal survey (Reed 1999 as cited in Cleto 2007). Also, the individuals who spearheaded the actual layout and construction of Baguio, namely William E. Parsons, Warwick Greene and George H. Hayward, were allowed to be flexible in interpreting Burnham's plans

By the beginning of World War II, Baguio had expanded into a center of transportation, a medical and educational hub, administrative headquarters of highland industries/commercial activities (such as mining, lumbering, tourism, vegetable production), and was visited by around 100,000 people per year (Reed 1999 as cited in Cleto 2007). The growth of Baguio's functions and population would continue throughout the years after World War II ended.

Baguio's Urban Ecosystem

The Components of Baguio's Urban Ecosystem

Figure 1. Baguio City Location Map.



Source: Baguio City 2002-2008 CLUP.

Physical Characteristics

Baguio City has a total land area of 5,749.00 hectares. It is located in Northern Luzon, in Benguet Province, and is bordered by the Municipality of La Trinidad on the North, the Municipality of Itogon on the East, and the Municipality of Tuba on the Southwest (Baguio City 2002-2008 CLUP).

As can be seen in Figures 2 and 3, the city's terrain is predominantly of undulating to moderately steep slope, which the 2002-2008 Baguio CLUP describes as having a slope grade of 19-30 percent.

Figure 2. Baguio City Slope, by Percent.

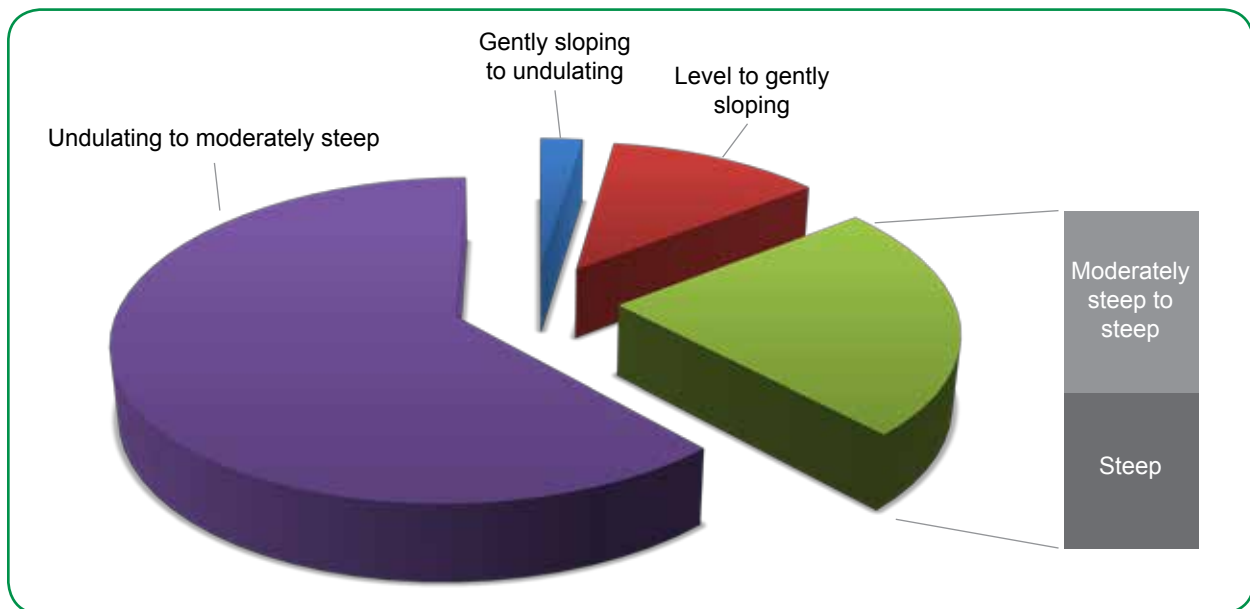


Figure 4 shows the levels of slope stability in different areas of the city. Slope grade and potential for failure has a bearing on which areas are safe and suitable for development, given the potential danger of landslides ("US Search and Rescue Taskforce" n.d.). It can be seen in the slope stability map that most areas of undulating to moderately steep slope have "moderate" slope failure potential. Philippine laws state that, in general, settlement development should be limited to areas that are of slope grade 18 percent and below (Forestry Code of the Philippines). Residential land use is spread over much of Baguio, however, including areas of relatively steep slope grade and with moderately high slope failure potential (Figure 5) and, since the time of the Marcos Administration, via Presidential Decree No. 1998, lands with slopes of 18 percent and over in Benguet and Cebu may be reclassified as alienable and disposable.

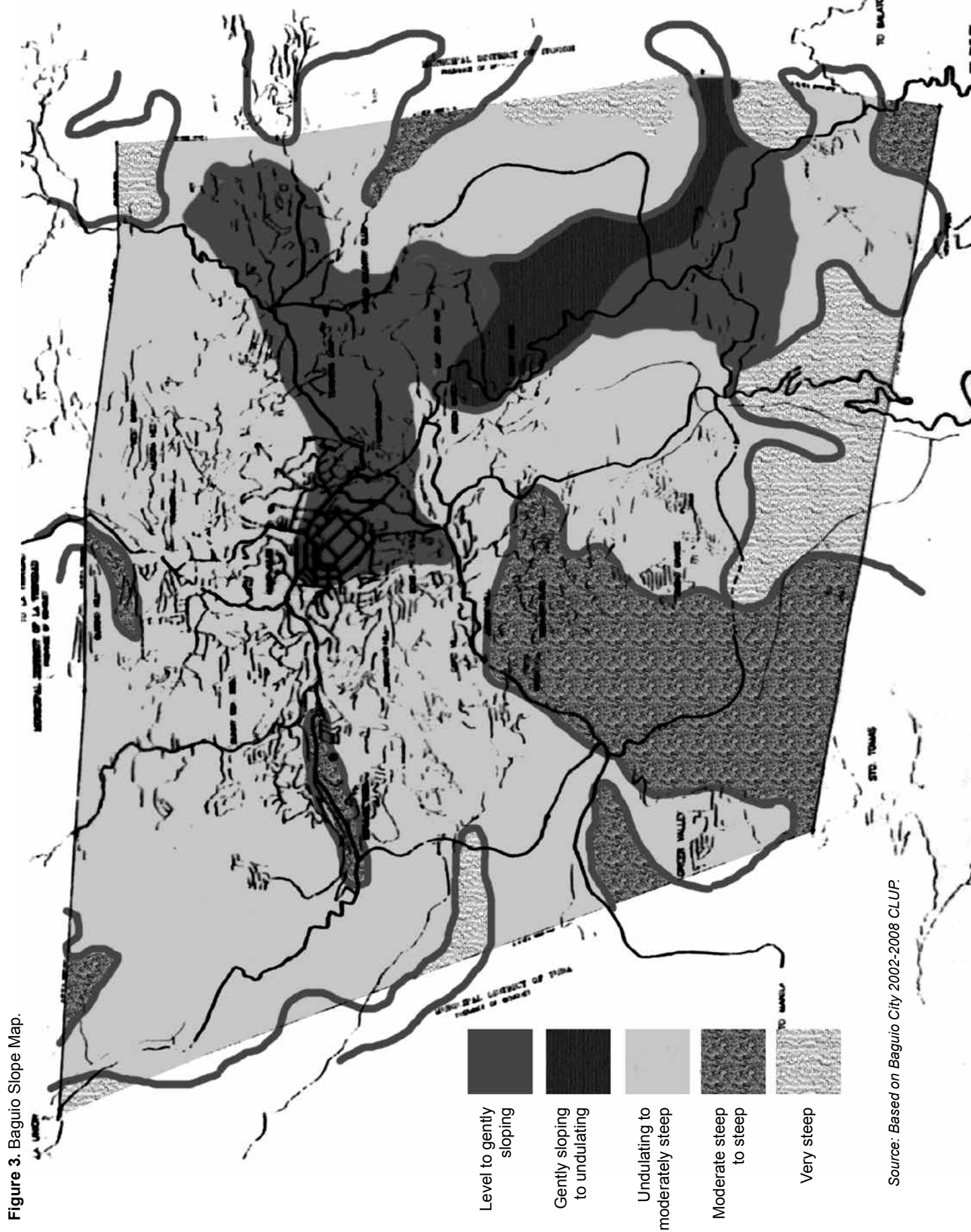
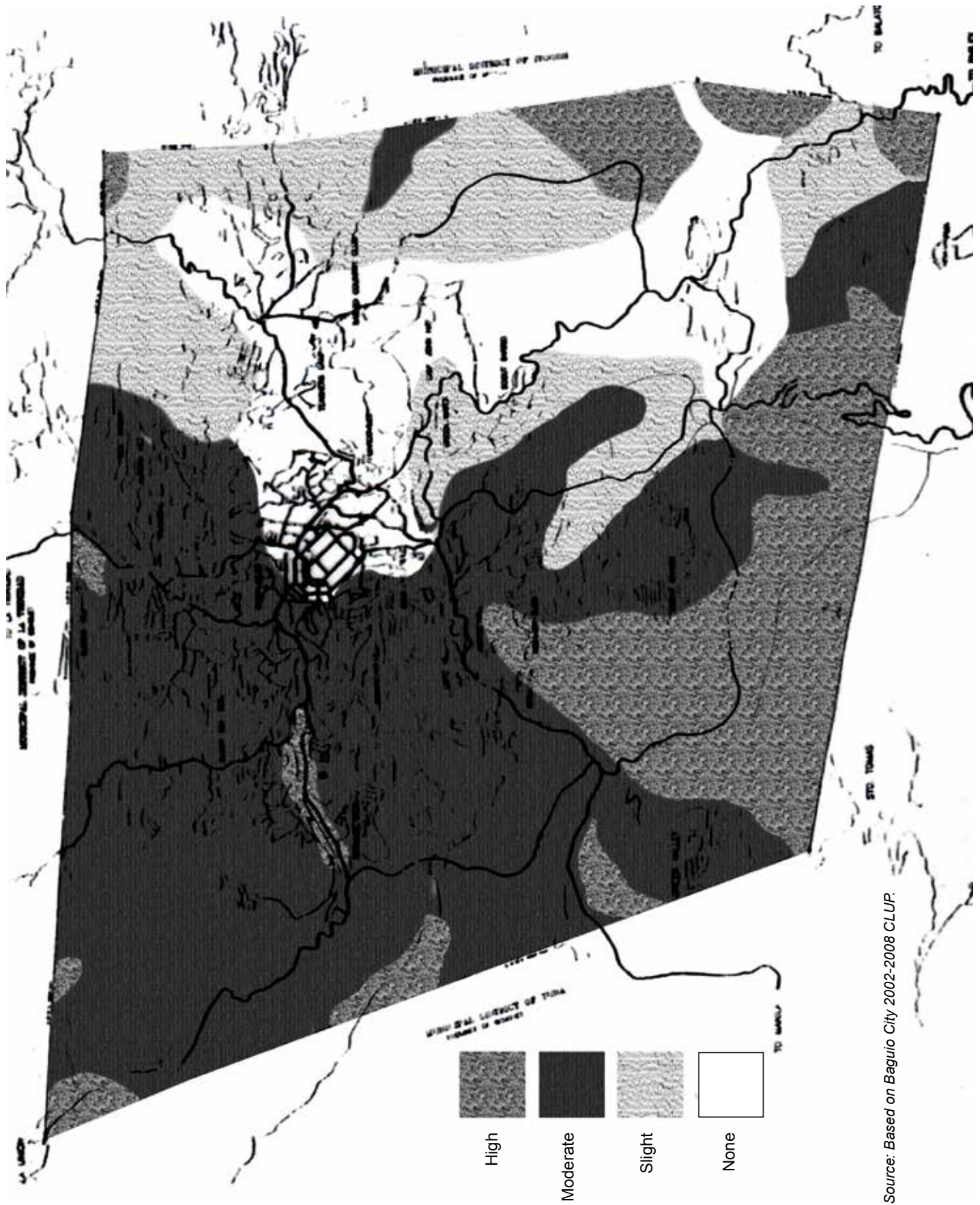


Figure 4. Slope Stability in Baguio City.



Source: Based on Baguio City 2002-2008 CLUP.

Figure 5. Residences constructed in steep, landslide-prone area.



Source: CEPMO 2010.

Climate and Rainfall

As with the rest of the Philippines, Baguio City has two seasons—a dry season that lasts from November to April, and a wet season from May to October (Baguio CLUP 2002-2008). The average temperature however in the city as of the 2002-2008 CLUP was 19.6 degrees Celsius, which is cooler by around nine degrees Celsius than it is in lowland areas. The relative coolness of Baguio City is changing, however, and has been linked to the global phenomenon of climate change. The highest temperature ever recorded in the city was 29.1 degrees Celsius, in April 2010 (“Hottest Ever” 2010).

Baguio City receives a higher amount of rainfall, on average, than most areas in the Philippines (Philippine Atmospheric, Geophysical and Astronomical Services Administration, n.d.). According to the 2002-2008 CLUP, the city has an average volume of rainfall of around 3,870 mm annually. Relatively recent events, however, have brought rainfall up to four times the monthly average in the city during a short period of time—such as during Typhoon Pepeng, when Baguio “topped the list” of places hit with exceptionally high rainfall (1,856 mm) from Oct. 3 to Oct. 9 (Papa 2009).

Population and Stakeholders

As of 2010, it was estimated that Baguio City had a population of 325,880, with the numbers expected to reach 419, 371 by the year 2020 (Proposed Updated 2011). Official figures released for the 2007 Census had the city’s population density at 5,250.9 persons

per sq km, with a population growth rate of 2.5. This was an increase from the population growth rate of 2.4 obtained during the previous census in the year 2000, when the city's population was at 252,386 with a population density of 4,389.3 persons per sq km (Cleto 2010). It should be noted, however, that Baguio City's population growth rate has already slowed from a high of 5.05 during the 1960s-1970s (Baguio City CEPMO 2010).

Carrying capacity, or a resource's ability to withstand disturbance or stress without intolerable environmental deterioration (Endriga, et al. 2004), is an important consideration in managing the development and resource utilization of any territory. Environmental degradation and the failure of water and power supply to keep up with the growing demand for these services indicate that Baguio's carrying capacity has been exceeded.

The need to control population growth has long been recognized by local government, which admits that the city has had difficulty in coping with rapid urbanization and population growth (2002-2008 CLUP), as well as long-time residents who have noted the congestion in the city center and have witnessed the deterioration of the city's environment over time (Cleto 2010).

The rate of population increase has also outpaced the growth of the local economy, as evidenced by poverty and unemployment statistics. Although the incidence of poor families decreased from 23.9 percent to 13.4 percent in the period 1994-997, it stayed static from 1997-2000. Additionally, unemployment in the city has been increasing steadily: from 5.4 percent in 1990 to 15.97 percent as of the 2002-2008 CLUP, and then to 17.2 percent as of the latest figures from the National Statistical Coordination Board (2011).

Unfortunately, controlling the growth of the city's population will be difficult due to the city's roles as a popular tourist destination and center of education and health services, all of which contribute to the city's transient population and a high rate of in-migration. People also often migrate to urban areas due to the perception that there are more and better opportunities in big cities. This was supported during an interview with a community leader working with the city's urban poor, who said that many of the city's indigenous migrants move to the city because their places of origin are far from city services and they don't produce enough from farming to be able to support their families; unfortunately, they often move to the city without being aware of the new/additional problems that city life brings.

One of the best ways to deal with this problem is to spread out development and reliable social services such as high quality schools and health care facilities into surrounding areas within the BLISTT planning area (Baguio-La Trinidad-Itogon-Sablan-Tuba-Tublay growth area) or "Metro Baguio," which was conceptualized after the 1990 Earthquake that damaged much of Baguio and other areas in Benguet province. The BLISTT Planning Framework is mentioned several times in the proposed updated 2010-2020 CLUP, which includes complementing and encouraging development in other BLISTT areas among its overall policies. Spreading out development may also be necessary for social services to reach those who have settled in the fringes and high-risk areas of the city's urban sprawl (2002-2008 Baguio CLUP).

The Indigenous Peoples of Baguio City, at Present

At present, the indigenous population of the city is not limited to the Ibaloi. In-migration has swelled the population to include other Igorot* groups from neighboring provinces in the Cordillera (see sections on Baguio Old-Timers and Igorot Settlers in Chapter IV of this paper) Although the city acknowledges the presence of different tribes in the city and although Baguio has a history of electing Igorot candidates to government office (see sections on Baguio's Ibalois and Baguio's Local Government in Chapter IV of this paper), the bearing this has on the protection of indigenous peoples' rights and interests is questionable:

Firstly, the Baguio City Planning and Development Office (CPDO) does not, at present, have data disaggregated by ethnic group or even data on the exact indigenous population of the Baguio City. The Office's research and development team hopes to be able to conduct a citywide survey of the city's indigenous peoples but states that are no funds for this at present.

The importance of indigenous-disaggregated data or at least "information on ethnic origin" was recognized in the Housing and Land Use Regulatory Board (HLURB) 2006 guidebook to CLUP preparation (Volume 2, A Guide to Sectoral Studies), where said data is listed as one of the determinants of the makeup and structure of an area's population. Disaggregated data is important for other, more specific reasons, particularly for areas occupied by communities/sectors often marginalized in the development process. Disaggregated data would help capture or bring to light experiences that may be unique to certain subsectors of the population and of potential significance to development targets. For example—it may allow identification of specific vulnerable populations, help ascertain the nature and scope of the problem, and bring this to the policy-makers' attention (National Collaborating Centre for Aboriginal Health 2009). Fortunately, it appears that data on the indigenous population of Baguio was collected during the 2007 Census, although this has not yet been released to the public.

Another general observation is that Baguio's indigenous peoples do not figure much in the latest approved Comprehensive Land Use Plan (2002-2008). Only the following brief mention was found in the CLUP section on Baguio's historical background (pp. II-5):

Baguio was a wide span of pasture and grazing land first inhabited by mountain tribes (Igorotes) called Ibalois and Kankanais. Baguio was partly planted with coffee and partly used as grazing ground for cattle. Huts were sprawled on different sections and from one main path horse and cart trails led to other parts of the city.

Though little can be said of pre-hispanic Baguio, it must be noted that the Igorotes had developed their own set of customs and beliefs, and a common, systematic trade system called barter before the westerners arrived.

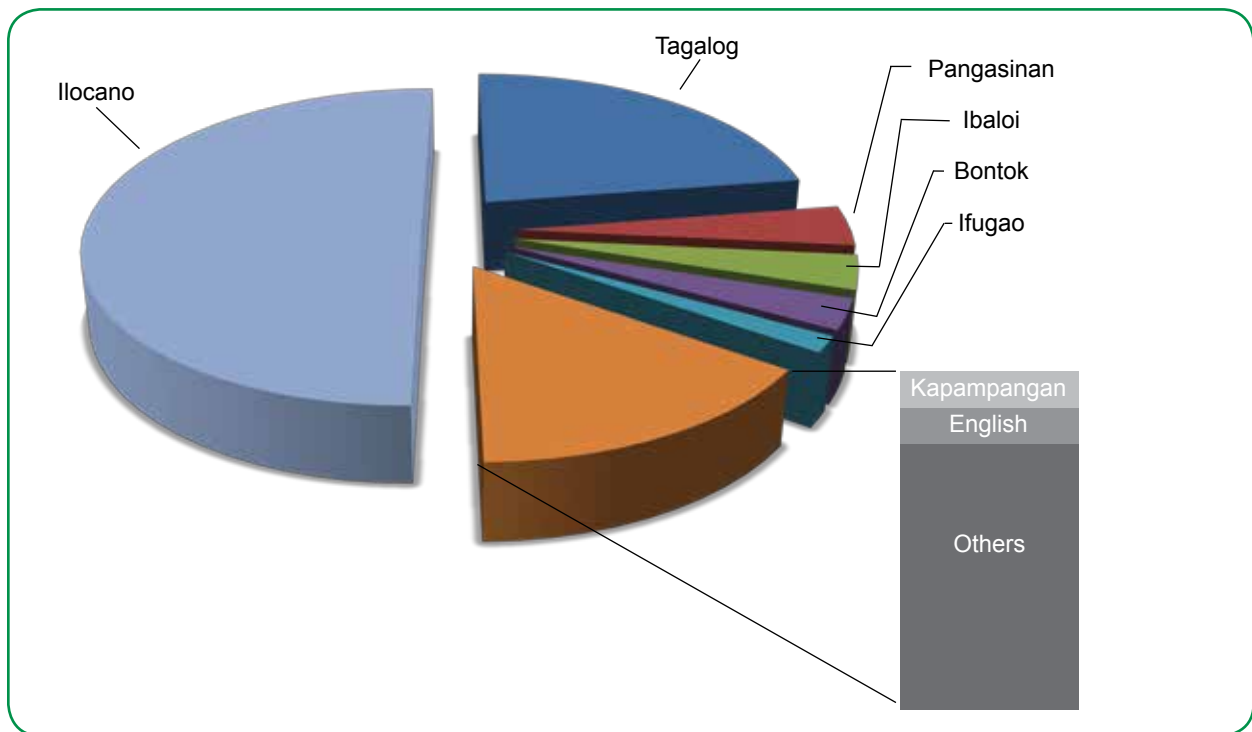
Hearing of Benguet's need for missionary activities and its potentials for gold, Commandante Galvey established Commandancias Politico Militar to rule the natives. Benguet was then divided into 31 rancherias. Baguio was one of these. It was then composed of only 21 scattered houses

* Collective name for indigenous peoples in the Cordillera region.

Note that the above differs from Baguio's history as told by Baguio's Ibaloi clans, who hold that the Ibaloi are the original settlers of the city.

The different indigenous groups of Baguio were also mentioned in a table showing population breakdown by mother tongue, based on the 2000 Census of Population and Housing conducted by the National Statistics Office (Figure 6):

Figure 6. Baguio Household Population by Mother Tongue, 2000.



The 2002-2008 CLUP *does* bring up the use of “indigenous strategies and materials” in carrying out the “Community Based Advocacy/Information, Communication and Education Component” of the local government units’ (LGU) Population Management Program. It must be stressed, however, there has been no official/formal count on the number of IP constituents.

Extremely brief mention is also made of Baguio's indigenous peoples in sections of the planning documents that touch on the management of forest reservations and ancestral domain claims.

Existing Land Use

Although traces of Burnham's original plan can still be perceived in its layout, the highly urbanized Baguio of today is now more reflective of overpopulation and uncontrolled urban sprawl, with the concomitant environmental problems (Cleto 2010).

In recognition of this, and other identified “threats” to the city's sustainable development, the following Development Vision and Development Goals were crafted for the City (Proposed Updated 2011):

Development Vision:

A breath-taking City of Pines, a living stage of culture and arts in harmony with nature, a prime tourist destination and center of quality education, with secured, responsible empowered and united people.

Development Goals:

- *Balanced Ecology;*
- *Faster Economic Growth (Sustainable Development);*
- *Higher levels and culturally enriched social development;*
- *Efficient and effective development administration and management;*
- *Efficient and effective infrastructure support facilities and utilities.*

The vision and development goals identified are commendable but are only words in the absence of proper implementation of supporting strategies.

In 2002, land use in the city was dominated by its open areas, comprised of its parks and watersheds, which at the time took up 1,951.80 hectares or 33.95 percent of its total land area, followed by residential land use which covered 1,760.9568 hectares or 30.63 percent of Baguio's total land area (see Table 1 below).

Table 1. Land Use, Baguio City, 2002.

Land Uses	Area	Percent
Residential	1760.9568	30.63
Commercial	201.35	3.50
Institutional	410.02	7.13
Park	48.83	0.85
Forest/Water Reserves	521.2332	9.07
Special Economic Zone	288.10	5.01
Open Areas	1951.80	33.95
Roads/Creeks	309.71	5.39
Industrial	130.39	2.27
Agrarian Reserves (BPI/BAI)	96.57	1.68
Airport	1.72	0.03
Cemetery	20.13	0.35
Abattoir	5.60	0.10
Garbage dumping site	2.59	0.05
TOTAL	5,749.00	100.00

Source: Baguio City CLUP, 2002.2008.

The 2002-2008 Comprehensive Land Use Plan (CLUP) proposed increasing residential land use to 2,784.76 hectares and, by the year 2008, residential land use had indeed expanded (with a corresponding shrinkage in the city's open areas).

The trend of increasing areas dedicated to residential use is again reflected in the draft 2010-2020 Baguio CLUP, as seen in Table 2 below. In fact, the total area covered by residential land use has already apparently doubled since formulation of the 2002-2008 CLUP.

Table 2. Existing Land Use, Baguio City 2010.

Land Uses	Class	Existing Land Area	Proposed Land Area
Residential	R1	1778.98	1994.80
	R2	952.38	983.38
	R3	779.95	540.60
	Total	3511.30	3518.78
Commercial	C1	74.60	71.08
	C2	30.32	37.10
	C3	42.89	42.89
	Total	147.82	151.07
Industrial		42.86	42.86
Institutional		398.61	412.80
Parks		70.68	70.68
Forest/Watershed Reserves		146.26	146.26
BAI Reservation		95.02	95.02
Vacant Forested Area		711.90	661.77
Camp John Hay		570	570
Abattoir		4.43	4.43
Cemetery		12.78	12.78
Airport		27.44	27.44
Utilities		9.90	35.11
Total		5749.00	5749.00

A comparison of the 2002 and 2010 land use figures shows that, in contrast to increasing residential land use, the area covered by commercial land use has actually decreased. Further, the proposed 2010-2020 CLUP recommends that the amount of land devoted to commercial use be more or less maintained as is. Industrial and institutional land use have also decreased which, in the case of the latter, is surprising given the city's oft-cited role as a center of education (Baguio 2002-2008 CLUP, Draft Updated 2010-2020 CLUP).

An evaluation of the space occupied by urban green spaces and even forest reservations in Baguio is difficult because of differences in the land use categories used in the 2002-2008 CLUP (which lists "Forest/Water Reserves" and "Open Areas" as land use

categories) and in the proposed 2010-2020 CLUP (which still lists “Forest/Watershed Reserves” as a category but has done away with the “Open Areas” category and, instead, lists “Vacant Forested Area” and “Camp John Hay” as land use categories). A close look at the land use tables indicates that Green Spaces (Forest/Watershed Reserves, Vacant Forests) have *increased* in the space between formulation of the 2002-2008 CLUP and drafting of the 2010-2020 CLUP.

The 2002-2008 CLUP listed the following Forest/Watershed Reserves (including Camp John Hay), which reportedly covered a total of 521.2332 hectares. Some of these forest reserves cross to the other BLISTT LGUs and serve as water supply sources for Baguio City and surrounding areas:

- Busol Watershed (112 ha): the chief source of water in Baguio. 2/3 of Busol Watershed fall within political territory of the Municipality of La Trinidad;
- Santo Tomas Forest Reserve (22.11 ha), jurisdiction over which is shared with the Municipality of Tuba;
- Forbes Park Parcels 1, 2, 3 (67.941 ha);
- Crystal Cave (4.073 ha);
- Camp 8 (14.36 ha);
- Buyog (19.93 ha);
- Lucnab (5.98 ha);
- Camp John Hay (273.87 ha);
- Poliwes;
- Pucsusan (0.8442 ha);
- Guisad (0.125 ha).

Forest/Watershed Reserves were described as covering only 146.2556 hectares in the proposed 2010-2020 CLUP; however, this document also listed Camp John Hay as a separate land use category covering 570 hectares (a vast increase from the 273.87 hectares indicated in the 2002-2008 CLUP). Further research will be needed to ascertain how the dramatic increase in land area covered by Camp John Hay came about.

Interviews with local planning personnel revealed that most of the “open areas” described in the 2002-2008 CLUP (where “open areas” were defined as vacant, unbuildable areas with slopes of above 50%) had already been occupied by informal settlers (Cleto 2010). The proposed draft 2010-2020 CLUP (as presented to various stakeholders in April 2011) did not specify what are considered vacant forested areas, but the open areas identified in the 2002-2008 CLUP are: the Irisan Conservation Area and the Atok Trail/Happy Hollow/Outlook Drive area. Apart from these, the 2002-2008 CLUP identified the following urban greenspace protected areas:

- Forbes Park;
- Club John Hay;
- Country Club;
- Teacher’s Camp;
- Brent School.

The 2002-2008 CLUP stated that *all* water and forest reserves would be maintained. Said plan acknowledged, however, that some portions of Forbes Park had been released

to individuals residing in the area and that this had decreased the area by around 4.68 hectares. This may be connected with issues of ancestral domain, as an interview with the CEPMO regarding ancestral land/domain issues and forest management revealed that the City Legal Office has recently made moves to reclaim areas in Forbes Park 1 and 2 that have been the focus of ancestral land/domain claims.

Comparison of land use figures also shows that park areas increased from 48.83 hectares in the 2002-2008 CLUP to 70.6756 hectares in the draft 2010-2020 CLUP. Proposals to increase park areas were included in the 2002-2008 CLUP and were based on the 1993 Baguio and Dagupan Urban Planning Project. In particular, three “proposed city parks” were described as having the potential to disperse the amount of people congregating at Camp John Hay and Burnham Park. These three parks were: “Three Hills Ridge Park” around the Dominican Hill-Crystal Cave area; “Quirino Hill Park,” which was to include a watershed reservation area supposedly compatible with park land use; and, “Reservation Park” in the reservations around the Baguio General Hospital.

“Local” or community parks were also mentioned in the 2002-2008 CLUP as part of the park-related proposals from the 1993 Baguio and Dagupan Urban Planning Project. According to the 2002-2008 CLUP, the neighborhood population can use these local parks for leisure activities and fiestas. The role local parks have in Baguio’s environment was not addressed in the 2002-2008 CLUP; however, staff of the Forestry and Watersheds Management Division of the CEPMO revealed that the local government is giving increasing importance to barangay parks. Included among the urban greening activities of this division are: the management of barangay watersheds and parks, promotion of the “adopt a park” planting site strategy among NGOs and the private sector, and the “Green Pacts Projects” that involves the purchase and distribution of fruit-bearing trees for interested barangay constituents to plant within residential areas.

Overall, at present, Baguio City is dominated by residential land use, which takes up 61 percent of its total land area (Proposed Updated 2011). The next largest amount of land is taken up by “Vacant Forested Area” (12.38%); followed by Commercial Land Use (2.57%). Forest/Watershed Reserves comprise 2.54 percent.

It should be noted that there are some discrepancies between the land use figures used in the draft updated 2010-2020 CLUP and the figures used in a report on Baguio’s Existing Land Use: Issues and Concerns, which was presented by the CPDO in a conference on Green Urbanism held in September 2010 (see Table 3). There are also differences in the land use categories identified.

Table 3. Existing Land Use presented in 2010.

Land Use Categories	Existing Area (Ha)
Residential	3,329.778470
Commercial	196.977900
Institutional	152.913139
Institutional Tourism	24.014250
Industrial	49.775429
Vacant Forested Area	1,149.162664
Watershed Reservation	154.627784
Bai Reservation	97.234700
Open Space	21.567266
Parks	74.598700
Airport	26.436332
Abattoir	4.428324
Cemetery	12.843904
Utilities	9.869316
Camp John Hay	445.536421
TOTAL	5,749.764599

Source: Cayat 2010.

Development and Management of Green Spaces

The CLUP (2002-2008) recommended that the local government be particularly selective in the approval of development proposals in the identified protected areas (Cleto 2010). It was also suggested that any buildings constructed should never rise above the tree covers.

In 2010, CEPMO revealed their goal of increasing forest cover area to 1,285 hectares or 22 percent of the total land area, which should leave 4,084 hectares or 71 percent for built-up and cultivated areas. Towards accomplishing this goal, the local government planted 595,000 seedlings in the period 1999 to 2008. According to CEPMO personnel, this allowed the city to sequester 4,760 tons of carbon dioxide (CO₂) (Cleto 2009). The city's forest and watershed management activities also include nursery management, out-planting, and maintenance, monitoring, and dispersal of about 30,000 seedlings annually. Unfortunately, the survival rate of these seedlings is only 60-70 percent, and the city's reforestation areas are also increasingly being dedicated to other uses (CEPMO 2010). A recent interview with CEPMO confirmed that maintenance of planting sites is an important issue they are trying to address by working with NGOs and the private sector.

Lack of personnel has also limited the LGU's reforestation and forest management activities: according to CEPMO staff, there are only two personnel assigned to forest protection, which involves the patrolling of forested areas, and dealing with informal settlers and poaching of timber. The city's forest rangers try to address the issue of encroachment into watersheds through a "family approach" of talking to stakeholders in forests and watersheds; however, a CEPMO staff member admits that more political will

as well as joint action with other agencies are needed to efficiently implement their forest management program. CEPMO apparently already coordinates with the Department of Environment and Natural Resources (DENR), which is mandated to carry out these tasks but is also hindered by the lack of personnel.

Projects currently under the Forest Protection and Law Enforcement program of the CEPMO include fencing off protected areas (which has encountered problems with delineation of boundaries); issuing permits for the utilization of forest resources including as giving tree cutting permits; and a forest information and education project, the implementation of which is again hindered again by the lack of personnel. This last project involves distributing information flyers to barangays, NGOs and students; and also conducting meetings with barangay captains and forest rangers.

Also mentioned in connection with forest and protected areas management is the demolition of structures built in these areas. Although the City Building and Architectures Office (CBAO) is in charge of demolition orders, CEPMO assists whenever there are demolitions in watersheds. The issue of demolition and the stubbornness of illegal settlers were also linked to ancestral land claims. Additionally, the 2002-2008 CLUP states that most reservations within the city are “subject to valid vested rights acquired prior to the issuance of proclamations and are being claimed as ancestral lands. Rampant squatting inside these reservations pose threat to the dwindling water supply and consequent contamination of its water sources.”

Community Participation

The 2002-2008 CLUP did give importance to community participation in managing urban green spaces and increasing the city’s forest cover. One of the strategies include in said plan was the integration of bio-intensive gardening and tree planting in residential areas, although community gardens were not mentioned apart from this. Other strategies identified in the 2002-2008 CLUP that are of relevance to community-level action include encouraging the building of mini-forests in barangays; and establishing an “alternative livelihood development program” specifically for constituents dependent on forest resources.

Tree-planting activities are also sometimes initiated by the communities themselves as part of community greening plans, and also by NGOs and other civil society groups.

Even without encouragement from the city government, some communities within Baguio (and perhaps even more so in the other BLISTT LGUs) already have a long history of maintaining home and community gardens as traditional means of livelihood and also as a way of meeting their day-to-day needs. According to one community leader, one of their former barangay captains had developed a six-year plan that included community “eco-composting” with the biodegradables collected from households and placed into a community compost pit, with the compost then available for use in backyard gardens.

The maintenance of such gardens serves an additional purpose by contributing to urban greenspace, which lessens the urban heat island effect; improving communities’ adaptive capacity – in connection with climate change – by increasing food security; and encouraging pro-environmental behavior by providing opportunity to use biodegrad-

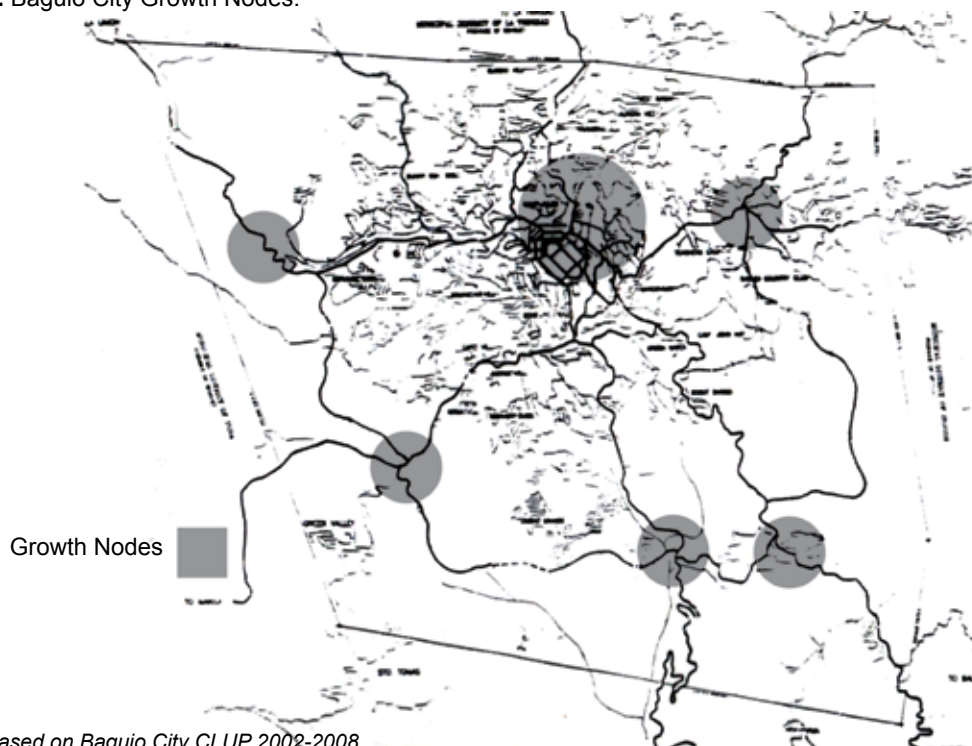
able waste as compost fertilizer and encouraging family members to spend time in the outdoors, which has been linked to a higher likelihood of exhibiting pro-environmental behavior particularly if exposure begins in childhood (Cleto 2010).

The proposed updated 2010-2020 CLUP also includes plans to increase the number of greenspaces in the city, but in the form of community parks within each barangay (village), as opposed to an expansion of the city's forest areas (Draft Updated Baguio CLUP 2010-2020). This plan, if implemented successfully, should increase community responsibility in developing and maintaining urban green space and, akin to the abovementioned effect of home/community gardens, also increase the likelihood of residents exhibiting pro-environmental behavior. The proposed 2010-2020 CLUP also lists the encouragement of gardens in structures and provision of green spaces in "strategic areas" within the city as strategies to promote a "balanced ecology" in Baguio.

Planned Expansion

Expansion of Baguio's built-up areas tends to center around the areas shown in Figure 7. Of these, the most prominent growth nodes (defined in the 2002-2008 CLUP as "areas that provide employment and service opportunities for the city as a whole and the barangays. These centers are near existing community facilities...and power, water, transportation facilities are available in these areas") have been identified as Barangay Irisan in the northwestern part of the city, Barangay Camp 7 along Kennon Road which leads out from the southern boundary of the city, and the Country Club area to the east of the Central Business District or CBD (Cleto 2010).

Figure 7. Baguio City Growth Nodes.



Source: Based on Baguio City CLUP 2002-2008.

In line with this, the LGU plans to adopt a “Multi-Nodal Urban Form” strategy to disperse development away from the urban core in the direction of the identified nodes of urban growth (Proposed Updated 2011). Apparently, the LGU had already settled on this spatial strategy during formulation of the 2002-2008 CLUP; however, the justification for this was revisited during development of the 2010-2020 CLUP. According to the proposed 2010-2020 CLUP, a Multi-Nodal Urban Form was just one of three spatial strategies considered during formulation of the updated CLUP; the other strategies being:

- Trend Extension, which involves continuing the practice of allowing individuals to construct anywhere they please with minimal government involvement; and,
- Concentric Urban Form, which is what we find when development is concentrated within one urban center.

According to the proposed 2010-2020 CLUP (Proposed Updated 2011), the Multi-Nodal Spatial Strategy was selected over others using a Goal-Achievement Matrix or GAM, where the alternative spatial strategies were rated or scored according to their perceived contributions to the city’s (weighted) Development Goals. This is ideal, given that one of the reasons the CBD experiences traffic congestion is the concentration of urban services in the area (Baguio CLUP 2002-2008). If successfully implemented, this should help decongest the city center, and reduce the time and distance residents have to travel to reach different services.

The Proposed 2010-2020 CLUP also repeatedly highlights the previously mentioned BLISTT development framework as a means of promoting development in areas surrounding Baguio and, thus, protecting and enhancing the city’s environment. According to local planning personnel, the BLISTT concept was constantly kept in mind during formulation of the proposed updated CLUP. This is despite the fact that an updated BLISTT strategic development framework still has to be developed, after the original BLIST (Baguio, La Trinidad, Itogon, Sablan and Tuba) Master Plan’s limited implementation.

These aren’t the first mentions of the BLISTT framework in Baguio’s official planning documents – the 2002-2008 CLUP included several concepts from the 1993 Baguio (Urban BLIST) Urban Planning Project in proposals to enhance the city’s urban design. These suggestions focused mainly on extending the axes of Burnham Park and linking other open areas/parks.

According to the National Economic Development Authority-CAR (BLIST Metro-Planning Project Part I 2010), the BLIST concept was limited by institutional weaknesses, the lack of legal basis and funding, and a lack of support from the LIST municipalities. This last has been attributed to a lack of clarity on what the LIST municipalities stood to gain from commitment to the BLIST concept, which identified Baguio City as the “service center” and recreation area; La Trinidad as the center of agro-industry, commerce, and vegetable trading; and Irisan, Tuba, and Loakan as locations for residences and “low scale” commercial facilities, and also as potential hosts to information and communication technology-linked economic activities and satellite college campuses. The BLIST Master Plan also included “heritage proposals”; namely the preservation of Baguio’s historical buildings such as the City Hall, several old houses near City Hall, the Recolletos Building,

Baguio Cathedral, and the Baguio General Hospital (BLIST Metro-Planning Project Part I 2010).

According to an online article on the 1992 BLIST Organizational Milestones and the Newly Reconstituted BLISTT, relatively recent milestones include a signing in 2009 of a Memorandum of Understanding (MOU) between the member LGUs, save for Sablan, and the contribution of funds from the member LGUs for the “formulation, promulgation, and execution” of the BLISTT Strategic Development Framework (1992 BLIST Organizational Milestones 2010). Major activities slated for 2010 were continuing financial contributions from BLISTT LGUs, and the formulation, legitimization and implementation of the 30-Year BLISTT Strategic Development Framework.

At present, Baguio officials and planners seem to view the BLISTT as a viable concept, one of the only ways by which Baguio City can be decongested, and a means for Baguio and surrounding Benguet towns to become a cohesive community with “shared socio-economic potential” (Palangchao 2009). Prior to his reelection in 2010, Mayor Mauricio Domogan stated that appropriate consultations with concerned Benguet officials would be carried out during development of the BLISTT plan (See 2010).

Water Resources and Drainage

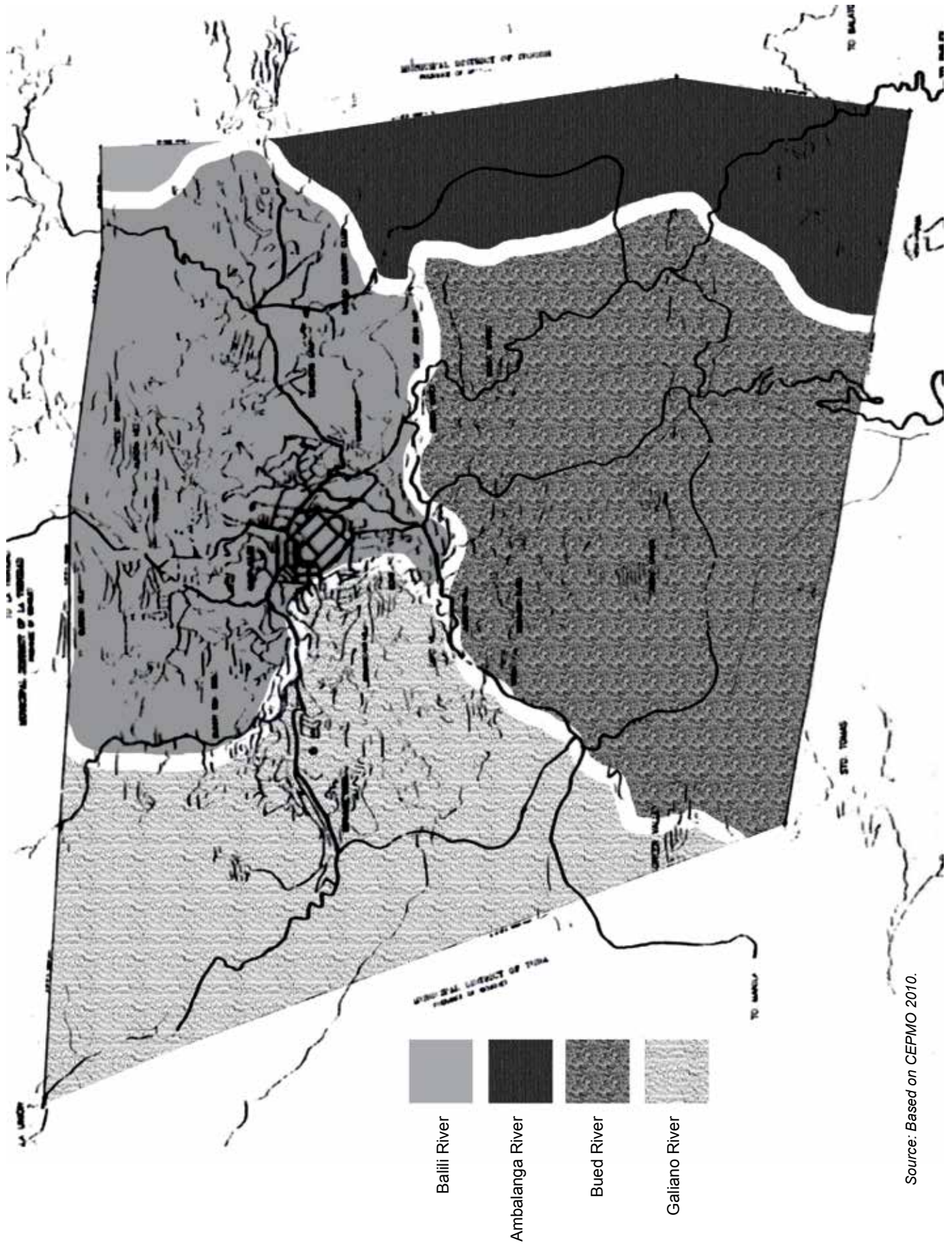
Apart from the negative impact on Baguio City’s open spaces and forest areas, urban sprawl and the ballooning population have also put strain on Baguio’s water resources.

Several watershed reservations, namely: Crystal Cave Watershed, Buyog Watershed, Busol Watershed, Camp 8 and Poliwes Watershed, Lucnab Watershed, Pugsusan Watershed, and Guisad Surong Watershed (CLUP 2002-2008); and four major waterways are located in or pass through Baguio City. As mentioned earlier, the Busol Watershed Reservation and the Sto. Tomas Forest Reserve have important roles in the city’s water supply.

Although the Cordillera Region, as a whole, has a relatively high capacity for ground-water storage, the needs of the highly-urbanized Baguio—coupled with the shrinking of its forest cover—have apparently outpaced its water resources, resulting in water shortages within the city (2002-2008 Baguio CLUP). Ibaloi elders interviewed identified the lack of water as the top environmental problem at present.

The waterways are the Balili, Ambalanga, Bued, and Galiano Rivers, as depicted in Figure 8 next page:

Figure 8. Waterways passing through Baguio City.



Source: Based on CEPMO 2010.

Table 4 Area and Population Feeders of the City's Major Waterways.

River	Area contributing in Has.	% to City Total Area	No. of Brgys. Traversed	% to total Brgys.	Population Contributing to Waterway	% to total Population 2007
Ambalanga	911.19	14.6	6.5	5.1	14,474	4.8
Balili	1,359.01	21.8	74.0	57.8	142,629	47.3
Bued	2571.78	41.3	22.5	17.6	63,022	20.9
Galiano	1379.37	22.2	25.0	19.5	81,717	27.1
TOTAL	6,221.35	100.0	128.0	100.0	301,541	100.0

Source: CEPMO 2010.

Pollution of the city's tributaries remains significant, and waste from the city drifts down to lower-lying areas such as La Trinidad—through which the Balili River also passes through—as demonstrated during a clean-up activity carried out by Benguet State University students in 2010, when retrieved waste included campaign posters of Baguio City politicians (Cleto 2010). Mayor Gregorio Abalos, Jr. of the Municipality of La Trinidad has also recently partnered with University of the Philippines (UP) Baguio to assess the level of pollution of Balili River and, hopefully, begin research into how to “save the Balili River” (Palangchao 2011). According to Palangchao (2011), Balili River—which Mayor Abalos describes as important water source for La Trinidad's farmers—was identified in DENR's 2003 Pollution Report as one of the country's “biologically dead” principal river basins. Palangchao (2011) also mentions Benguet Electric Cooperative's (BENECO) and CEPMO's ongoing survey of barangay sewage connections along the Balili River as among initiatives to save the river.

The river catchments that cross Baguio serve as its natural drainage system (Baguio 2002-2008 CLUP) and show how the state and management of the city's environment is closely tied to the state and management of the environment in surrounding areas. As one community elder in Barangay Loakan Liwanag commented, the Philippine Economic Zone Authority or PEZA processing zone has polluted the creek that runs through their barangay or village—a creek that once yielded frogs that could be gathered for food but is now foul-smelling and full of algae. She relates that what comes through their community creek goes to the river, which flows down to the lowlands and gathers in Rosario town, where the bridge once collapsed.

Shared jurisdiction over protected areas such as watersheds can also lead to complications over their management. For example, CEPMO personnel reveal that a project for fencing off the Busol Watershed has run into difficulties because delineation is not yet finished on the side of Baguio, although already accomplished on the side of the Municipality of La Trinidad.

According to CEPMO Officer-In-Charge Lacsamana, sources of pollution for Baguio's waterways include informal settlements along the waterways and residents' disposal of their garbage, laundry wastewater and raw sewage into the rivers; overflow from septic tanks, construction debris and soil from excavations; solid and liquid waste discharge from the market, slaughterhouses, piggeries, machine shops; river quarrying and small

scale mining; disposal of septage by haulers; and the Baguio Sewage Treatment Plant (BSTP) operating beyond capacity.

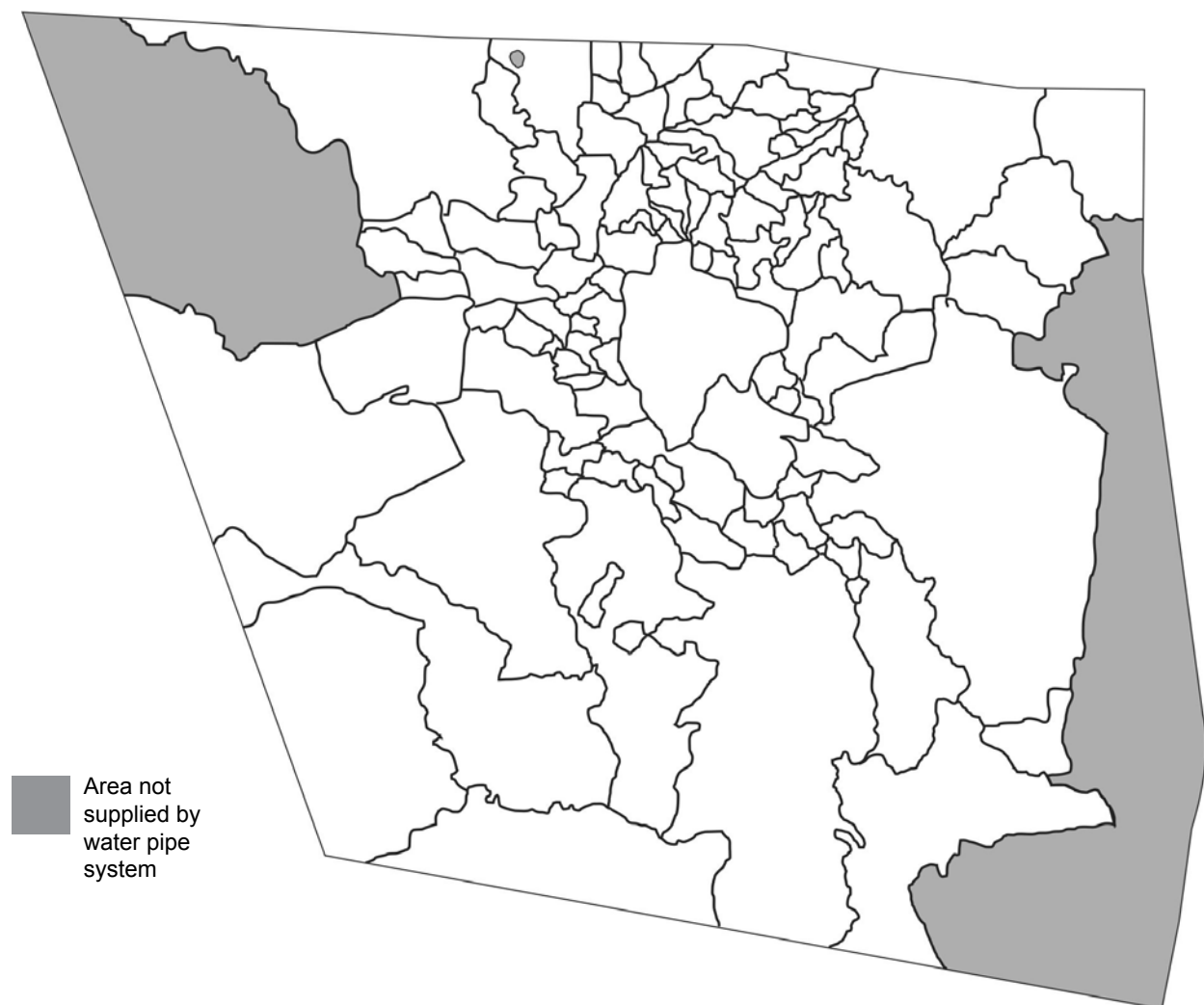
A source of water pollution repeatedly pointed out during interviews with community leaders is the previously mentioned PEZA processing zone. Pollution from this facility viewed as the most pressing environmental problem in Barangay Loakan Liwanag and was brought to the attention of the local chief executive and the Department of Environment and Natural Resources more than 10 years ago; however, residents feel that nothing has been done towards solving this problem. This apparently supports the view of some community leaders that LGU officials and city planners are not really aware of issues at the community level. As will be discussed further in this paper, the PEZA has been a problem for local communities since its introduction during the administration of former President Ferdinand Marcos and has led to conflicts between local communities and the city government.

According to one source, the CEPMO issues notifications of warning to owners of houses/other structures observed to have wastewater flowing into the drainage system instead of to a septic tank. As previously mentioned, the CEPMO is working with BENE-CO in using Geographic Information Systems (GIS) to map Baguio's sewerage systems. So far, a total of 80 out of the city's 128 barangays have already been covered by the project, which involves house to house visits to check if each one has a septic tank, how their wastewater is discarded, etc. The CEPMO has also been implementing advocacy campaigns and seminars to increase people's awareness of proper wastewater disposal.

Towards the more efficient management of Baguio's water resources, the city also has a project referred to as the "Water Dialogues," which is supposed to encourage multisectoral participation in the continuing management of the city's inner waterways, and which also served as basis for formulation of office function guidelines in the city's Sustainable Water Integrated Management and Governance (SWIM) Project (Integrated Water Management 2006). One of the outputs of the SWIM Project was Baguio City's "Water Code." According to one local official, Baguio is one of Southeast Asia's pioneering LGUs in the enactment of such a code, which identifies national and local policies that should allow the local government to efficiently meet the water needs of Baguio's residents (Integrated Water Management 2006, as cited in Cleto 2010). Committees/offices involved in said project include the Local Drinking Water Committee created in 2005; the Baguio Association of Purified and Mineral Water Refillers that works on monitoring the quality of drinking water; Task Force Balili, which focuses on the protection and rehabilitation of the Balili River and its watershed; the Baguio Regreening Movement; and the Regional Multisectoral Forest Protection Monitoring Committee. The last two work to safeguard and revive Baguio City's forests and watersheds, and also to increase knowledge of the interrelationships between forest cover and water security. It is interesting to note that there are, apparently, several existing initiatives to Save the Balili River—one based in Baguio's CEPMO and another led by the La Trinidad Municipality in cooperation with UP Baguio, as earlier mentioned. It may perhaps be beneficial for these initiatives to pool resources in a coordinated effort: funding, apparently, is still a major issue when it comes to water resource management projects in Baguio, according to one of CEPMO's personnel.

Despite the enactment of the Water Code and the existence of projects such as the above, the local government still experiences difficulties in meeting the water needs of all its residents. In terms of access to safe water, seven (7) barangays are still not served by the pipe system, as shown in Figure 9 below. Information from CEPMO indicates that the city draws about 85 percent of its water supply from underground sources, with system losses amounting to approximately 38-45 percent (Cleto 2010).

Figure 9. Location of areas not served by the water pipe system covering 25% of total household population.



Source: CEPMO 2010.

A staff member of CEPMO commented that, apart from funding problems, there is a lack of political will in ensuring that the enforcement of water-related policies and regulations are sustained. Conflicts between community officials and city-level offices again cropped up in the discussion of water problems, with a CEPMO staff commenting that barangay captains bring their complaints to the CEPMO but must also do their part. This same source remarked that one other issue is the lack of coordination between pro-

ponents of projects that address related environmental problems, such as solid waste and wastewater.

Transportation Issues

The road network of Baguio City is radial, with all traffic converging at the Central Business District or CBD (CEPMO 2010 as cited in Cleto 2010).

The rising population and increasing dependence on motorized forms of transportation, in general, and private vehicles, in particular, have contributed to traffic congestion in the city, particularly in and around the CBD (Cleto 2010). In view of what local officials, including the Regional Director of the Department of Transportation and Communication (DOTC) in the Cordillera Administrative Region (CAR), recognized as a considerable traffic problem, the City Council passed Ordinance No. 050 Series of 1992 creating the Traffic and Transportation Management Committee (TTMC). This body is chaired by the City Mayor and co-chaired by the Regional Director of DOTC-CAR, with its members including the Regional Director of the Department of Public Works and Highways-CAR; a traffic engineer representing the Private Sector; the Chairman of the City's Committee on Public Utilities, Transportation and Traffic Legislation; the City Director of the Baguio City Police Office; the Chief of the Traffic Management Branch of the Baguio City Police Office; the City Engineer; City Planning and Development Officer; City Legal Officer; Chief of the Public Order and Safety Division; and one more representative from the City Mayor's Office and City Planning and Development Office (CPDO). Unfortunately, planning personnel at the Baguio CPDO admit that the TTMC is primarily a "recommendatory committee," with no real power. They also describe the TTMC as being "reactive": its work usually involves producing experimental traffic rerouting schemes to deal with events (such as conferences) to be held in the city, and only acts once complaints come in or requests are made for additional loading/unloading areas. Apparently, there have also been instances the City Council has approved traffic management schemes without consulting the TTMC. The planning officer interviewed stated that they have already put in a request for the council to enact an ordinance that will make the TTMC more effective, and allow them to establish engineering interventions that will safeguard both pedestrians and motorists.

It was further revealed that the committee lacks updated data because they have been operating on a "zero budget." The only relatively updated transportation data the city government has is on vehicle registration, shown in Table 5 below:

Table 5. 2006-2007 Vehicle Registration in Baguio City.

Year	Type of Motor Vehicle							Total
	Cars	Utility V	SUV	Trucks	Buses	MC/TC	Trailers	
2007	7,769	18,256	1,544	1,685	48	2,162	8	31,472
2006	14,239	13,209	3,295	1,321	227	1,352	16	33,659

Source: CEPMO 2010.

A representative of the CEPMO commented that the number of registered vehicles in the city is still undesirably high if considered alongside Baguio's small land area, although the number of registered vehicles decreased from 33, 659 in 2006 to 31, 472 in 2007.

According to local planning personnel, lack of funding also stood in the way of implementation of the (proposed) Traffic and Transportation Master Plan of Baguio City, the P4M (US\$100,000) budget of which was "reverted" after its proposal eight to 10 years ago.

The above aside, the TTMC has put in place several traffic management schemes, the more recent of which include the following:

- Ordinance No. 43 Series of 2008: to "regulate the use of Kennon Road within Baguio to light motor vehicles to preserve the ambience and highway surface, and for protection and general welfare";
- Ordinance No. 33 Series of 2009: declared that it is "unlawful for Public Utility Vehicles to use the Central Business District for loading and unloading due to heavy traffic and pollution";
- Administrative Order No. 196 Series of 2009: "designating loading and unloading areas for taxis and private vehicles only along Session Road," which was in response to stakeholders' desire for improved air quality and smoother flow of traffic, and also in recognition of traffic congestion brought about by double parking along Session Road.

In addition to the above measures, a number coding scheme for private motor vehicles has been implemented since 2007 although this has been periodically suspended, particularly during the summer months. The original scheme was amended by virtue of Administrative Order No. 51 Series of 2010 to a number coding scheme from Mondays to Fridays and an odd-even scheme on weekends. Administrative Order No. 155 Series of 2009 also established an odd and even number coding scheme for public utility vehicles in the city.

Local ordinances have also been created that prohibit parking within particular times, mainly during rush hour, and that exempt private motor vehicles, chartered Public Utility Vehicles of visitors, and participants of sanctioned activities such as conferences from the local number coding scheme so as to make it easier for visitors to have a comfortable and relaxing visit to the city while using their private vehicles.

According to a local planning officer, the TTMC has received several complaints in connection with a few of their traffic rerouting schemes, all of which were designed by Engr. Teodorico A. Tan: for example, members of the UP Baguio Community have recently complained about pollution resulting from traffic rerouting along UP Drive.

Again, it appears that local communities do not have a significant role in making major transport-related decisions. Apparently, the rerouting schemes were not afforded consultations or public hearings before being implemented. The role of the community in transport-related development is more in terms of infrastructure: based on interviews with community leaders, major barangay-level projects in the case study communities always include road improvement or paving.

Transport management strategies in the Proposed 2010-2020 Baguio Comprehensive Land Use Plan are (Proposed Updated 2011):

- Provide pedestrian walkways in major and barangay streets to encourage a healthy lifestyle and cut down on energy costs;
- Promote use of public instead of private transportation to save fuel and lessen congestion;
- Provide efficient circulation/access routes to decrease travel time, traffic congestion, and transport costs;
- Establish urban development services in strategic areas to disperse development and decrease congestion/traffic;
- Develop a new “environmental friendly transportation system” that will decrease travel time and cut down energy use.

Although not directly related to transportation, the following strategies should also have an effect on which method of transportation people choose to use:

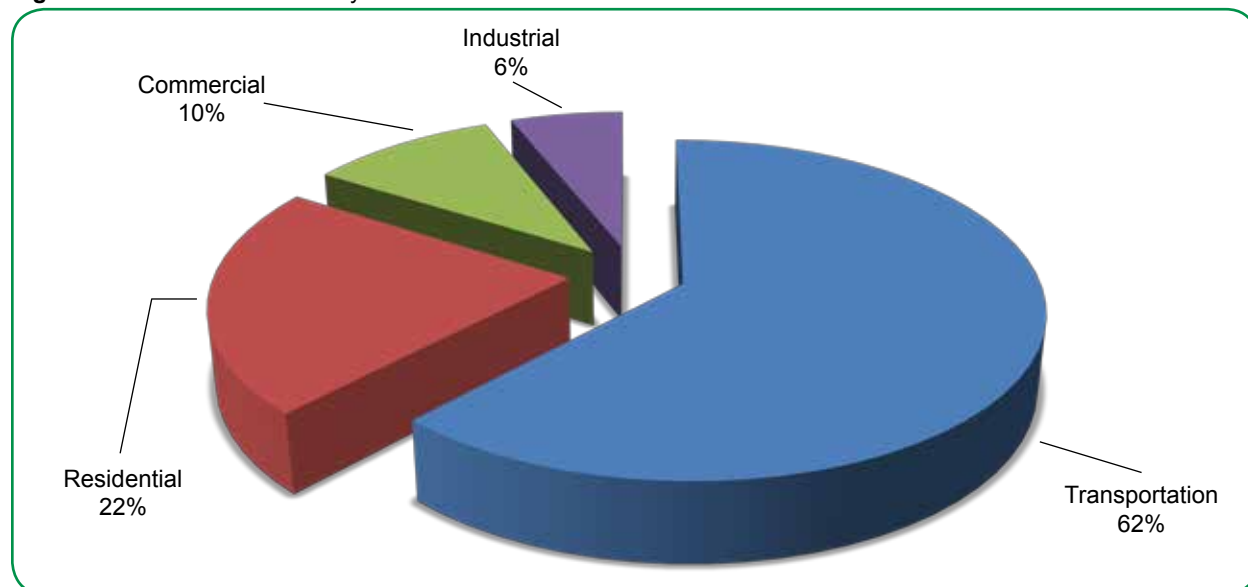
- Providing green spaces in specific areas and encouraging the establishment of gardens in structures;
- Establishing “true nature parks” within each barangay;
- Advancing an improved solid waste management system.

Providing a pleasant and clean environment would encourage people to walk and spend time in the natural environment. Increased exposure to the natural environment, in turn, has been linked to the exhibition of pro-environmental behavior (Cleto 2010, 2), which, theoretically, should include one’s choice of mode of transportation.

Based on interviews with community leaders and perusal of available Barangay Profiles/ Annual Report (in the case of Barangay Loakan Proper), it seems that community-led initiatives relating to transport seem to be limited to development of roads and paths, and construction of waiting sheds. One of the environmental problems identified in Barangay Loakan Proper was the air pollution caused by smoke belchers on the national highway that runs through the community.

Air Quality

Baguio City’s air quality has deteriorated with the increasing reliance on motorized forms of transportation, although Ambient Air Quality is still described as “good to fair” by the CEPMO (2010, as cited in Cleto 2010). The primary contributor to the carbon dioxide emissions in Baguio is the transportation sector, as shown in Figure 10:

Figure 10. Source of Community Carbon Dioxide Emissions.

Source: CEPMO 2010.

The city has sought to deal with air quality issues through the enactment of the Clean Air Ordinance of the City of Baguio (City Ordinance Number 61, Series of 2008). Activities under the Clean Air Campaign included carrying out roadside inspections and monitoring tests of diesel-fed vehicles. According to data from CEPMO (as cited in Cleto 2010), a 54 percent passing rate of vehicles was obtained during these activities, which also generated P374,000 in fines.

Baguio City was also chosen as pilot area of the Clean Cities Program, which was a joint project of the Philippine Department of Energy and the US Department of Energy with support from the United States Agency for International Development (USAID), and involved encouraging the use of alternative fuels through Jeepney Drivers and Operators Association fieldtrips to the Department of Energy, Metro Manila Development Authority, Petron, and Shell to notify them about existing alternative fuels; a “Green Fleets” endeavor involving pilot testing several taxicabs to run on liquefied petroleum gas (LPG) (tie up with Shell Filipinas); conducting a Clean Air Campaign Forum for drivers and public transportation officers; promoting the utilization of Coco Methyl Ester (CME) for diesel engines; and encouraging regular preventive maintenance of vehicles to lower emissions (CEPMO 2010; Mobilizing Local Investments 2007 as cited in Cleto 2010).

The aforementioned Number Coding Scheme also seems to have helped the city reduce transportation-linked greenhouse gas emissions. According to CEPMO (2010, as cited in Cleto 2010), this scheme shrank the number of vehicles passing through city roads by 20 percent, and also decreased forecasted CO₂ emissions by 20,229 tons (8.59%).

More recently, emissions testing mobile units have been visible around the city to perform spot-checks on selected motor vehicles. Unfortunately, CEPMO personnel admit that their coverage is extremely limited given that they are only in possession of two emissions testing machines.

Waste Management

According to current Mayor Mauricio Domogan, waste management is the biggest environmental problem in Baguio City today. This is supported by interviews with community leaders. The problem of solid waste management, particularly continuing problems with lack of segregation and the burning of waste, was first among the “most pressing environmental problems” in Barangay Loakan Proper.

Solid Waste Management

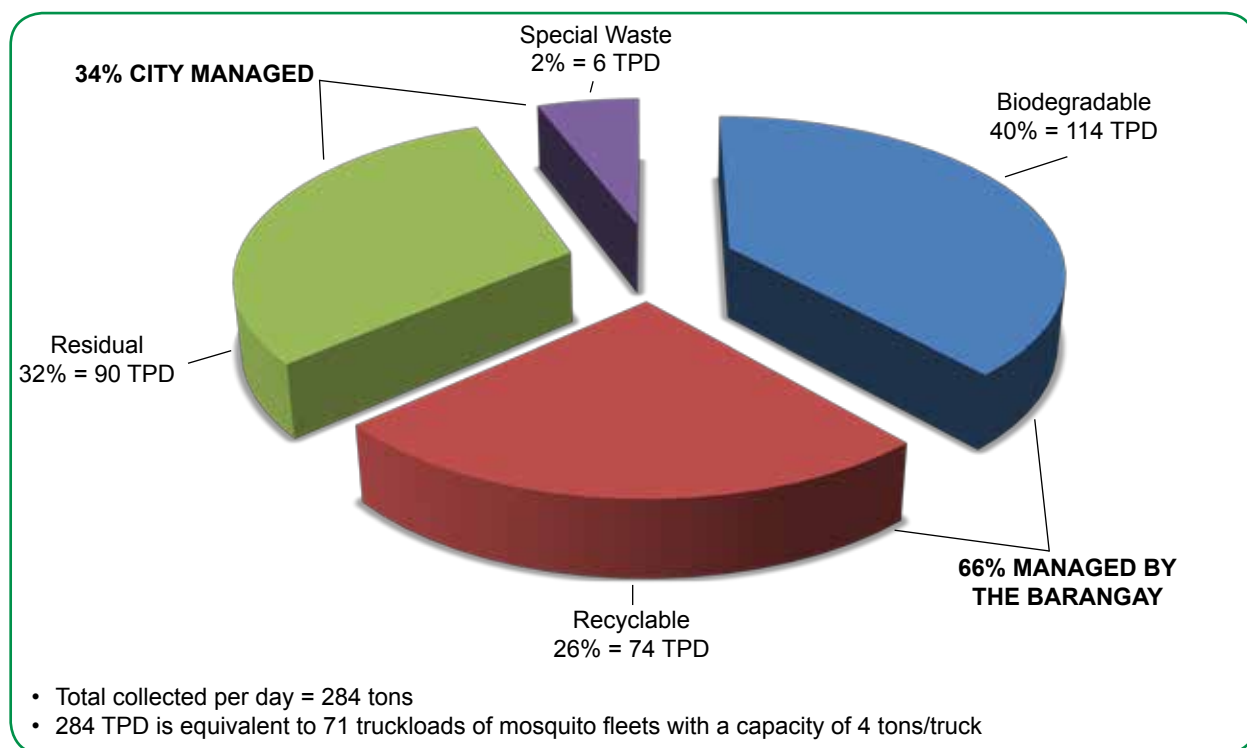
In the country, the legal framework for solid waste management (SWM) is contained in Republic Act 9003 (Ecological Solid Waste Management Act of 2000) where Ecological Solid Waste Management is defined as “the systematic administration of activities which provide for segregation at source, segregated transportation, storage, transfer, processing, treatment, and disposal of solid waste and all other waste management activities which do not harm the environment” (Article 2, Section 3). RA 9003 also identifies the institutional instruments, incentives, processes, regulations, penalties, and programs linked to SWM (Cabrido 2007 as cited in Cleto 2010, 2).

Included among RA 9003’s directives are (RA 9003; RA 9003 IRR):

- waste segregation primarily at source (Section 21);
- mandatory segregated collection (Section 1 Rule X, of IRR);
- establishment of LGU Materials Recovery Facilities per barangay or cluster of barangays (Section 32); and,
- prohibition of the use of open dumps for solid waste, provided that every LGU converts its open dumps into controlled dumps within three (3) years after the effectivity of RA 9003 and, further, that controlled dumps will be disallowed five (5) years after the effectivity of the Act, in favor of Sanitary Landfills (Section 37).

Unfortunately, the mandates of RA 9003 have yet to materialize in many localities. In the case of Benguet, only the Municipality of La Trinidad has constructed a controlled dumpsite; and, even in this case, use of the open dumpsite has not completely ceased (Cleto 2010, 2)

In Baguio City, the CEPMO (2009) reports that 66 percent of the city’s waste (biodegradables such as kitchen and yard waste, and recyclables including glass and bottles) is supposed to be managed by the barangay, while the remaining 34 percent (residuals composed largely of plastic packaging, and special wastes including old electric bulbs, batteries and chemical containers used at home) should be collected and managed by the city government (see Figure 11 next page). The local government is said to collect 284 tons of garbage per day.

Figure 11. Characterization of Waste Collected by the City 2009.

Source: Lacsamana 2010.

This system, however, requires a certain level of segregation at source as mandated by RA 9003, and the CEPMO (2010) admits that garbage collection in the city is still “mixed.” They add that there is a lack of support for segregated collection and a need for more intensive pro-segregation information and education campaigns involving various sectors (academe, business, and religious sectors; non-government offices/peoples’ organizations).

Waste collected by the city is first brought to the Transfer Station in Barangay Irisan, which is the location of the open dumpsite closed in July 2008, before being hauled to the Sanitary Landfill in Capas, Tarlac (Baguio CEPMO 2009). Most of the city’s waste originates in residential areas, as shown in Table 6.

Table 6: Sources of Waste in Baguio City.

Major Waste Source	Generation in TPD Collection		
	Volume	Percent	Volume
Residential	138	43	122
Food Establishments	71	22	62
General Stores	32	10	28
Public Market	26	8	23
Service Centers	23	7	20
Recreation Centers	19	6	17
Institutions	6	2	6
Industries	3	1	3
Special Waste Geneators	2	.62	2
Slaughterhouse	1	.35	1
TOTAL	321	100	284

Source: Lacsamana 2010.

Among the local government units (LGUs) of Benguet, the solid waste management system of the Municipality of La Trinidad is supposed to be exemplary. According to Benguet Provincial Governor Nestor Fongwan, the La Trinidad LGU started conceptualizing its “comprehensive ecological solid waste management system” in 1994—a system they envisioned would include a sanitary landfill, leachate pond, bio-reactor equipment to be used in composting, and a material recovery facility (Aro 2007 as cited in Cleto 2010, 2). An interview with a representative of the La Trinidad Mayor’s Office, however, revealed that local laws on solid waste management—Ordinance No. 53-98 Providing for a Comprehensive Solid Waste Management of the Municipality, which was meant to serve as guide in the control and regulation of generation, storage, collection, transportation, disposal of solid waste; and Executive Order No. 03-2009 for the issuance of citation tickets for the enforcement of penalties provided in Ordinance 53-98—have yet to be enforced (Cleto 2010, 2).

As of 2010, the municipality’s solid waste facilities included Benguet’s only controlled dump facility located in Barangay Alno (See 2009, as cited in Cleto 2010, 2). In compliance with RA 9003’s directives, La Trinidad has been trying to “upgrade” said controlled dump into a sanitary landfill but has as yet been unable to procure the required clay lining (La Trinidad Still Lacks 2009 as cited in Cleto 2010, 2). La Trinidad’s official website states that the LGU’s solid waste management initiatives also include advocacy on waste reduction, segregation, recycling and reuse; a materials recovery facility; and a composting facility (Solid Waste Management 2 2010). The website also includes the information that around 85,281 tons (21 dump truck loads) of garbage is generated daily in La Trinidad, with most waste coming from residential areas, commercial areas and the trading post.

Waste Management within Communities

Communities differ in their waste management practices – while the implementation of waste segregation at source is still problematic in many areas in Metro Baguio, a few communities are disciplined in practicing household waste segregation and even have a history of this that extends past relevant local government solid waste management regulations. One such community is Sitio (Sub-village) Boted in Barangay Tawang, La Trinidad which has been recognized for their community-led solid waste initiatives, including a practice of waste segregation that community elders say their families have been practicing even when they, themselves, were children (Cleto 2010, 2).

One potentially significant factor in local solid waste management activities, at least in traditional communities, is the concept of *Ayyew*, which means that “everything has its use and nothing must be wasted” (Cariño 2010 as cited in Cleto 2010, 2). *Ayyew* is a traditional value of the indigenous peoples of the Cordillera that, according to Cariño (2010, as cited in Cleto 2010, 2), espouses the optimal use of each resource that would lose its value and become garbage if mixed up with other things. In this way, *Ayyew* can be viewed as a foundation for waste segregation in traditional communities. Cariño (2010, as cited in Cleto 2010, 2) stressed that indigenous migrants into Baguio City and La Trinidad have traditional waste management systems as part of their culture and observed that the present-day form of *Ayyew* is supported by appropriate technologies, such as new methods of composting.

Local communities studied by Cleto in 2010 seemed open to learning more about methods such as vermicomposting that may further increase the efficiency of their household waste management practices. The CEPMO has also recently revived its interest in learning more about biogas and vermicomposting from a local NGO involved in the initiative.

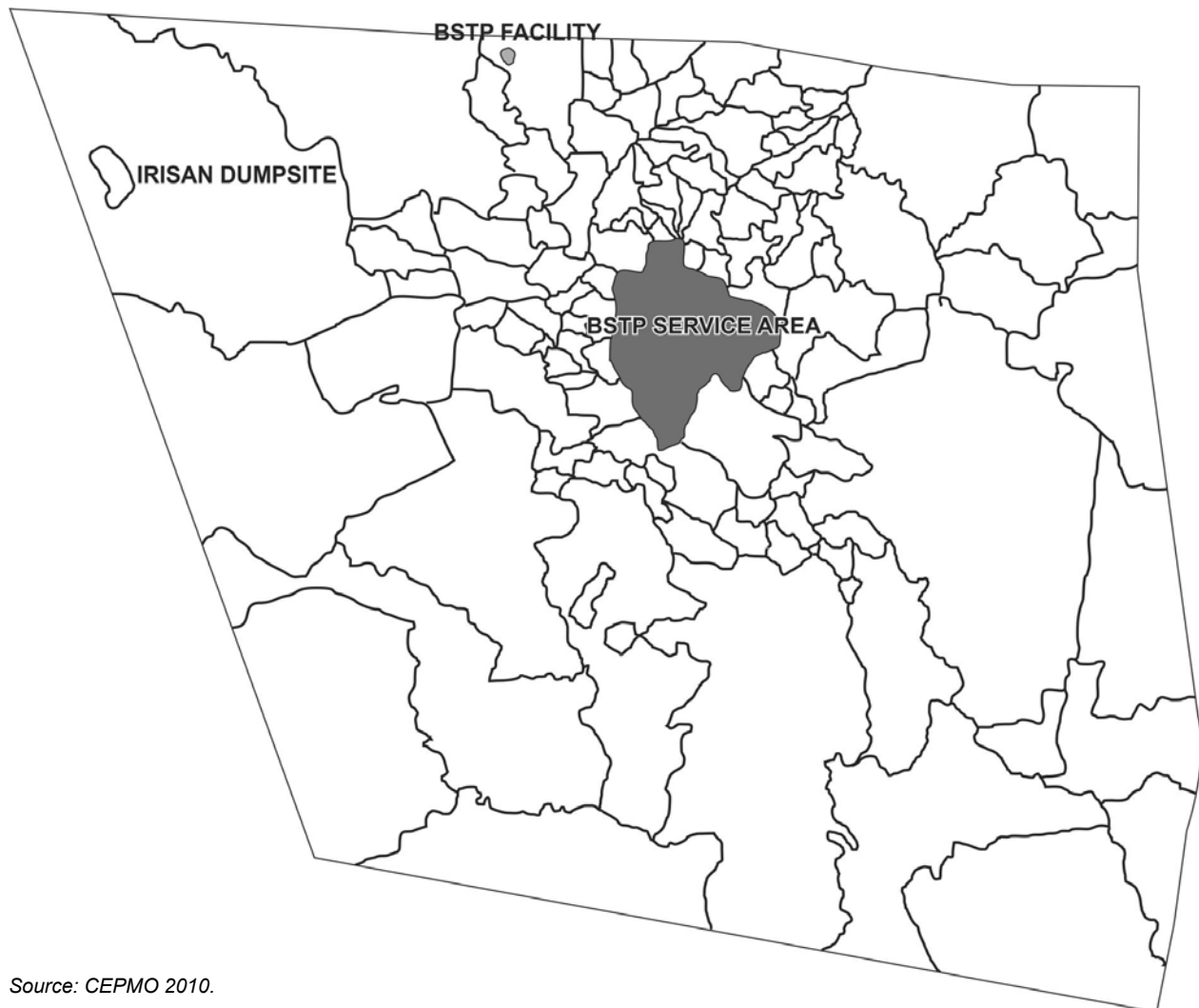
In the case of Loakan Proper, the Barangay Profile 2010 describes the barangay waste management activities as including a constant monitoring of sanitation conditions in every *purok* (sub-village) by the barangay Committee on Sanitation, regular clean ups once a month on a barangay level. The Barangay Profile notes that residents “usually” practice waste segregation, recycling, composting, and feeding animals as waste management activities; however, cases of open dumping and burning of garbage can still be observed (Loakan Proper Barangay Profile 2010). A barangay official also shared that Loakan Proper has Ordinance 02 Series 2008 (“Ecological Solid Waste Management at Loakan Proper Barangay”) that identifies rules for proper waste management in the community and also corresponding penalties for non-compliance. Said Ordinance was proposed by Councilor Edouard Emmanuel Cayetano in the year 2008 and was approved by the City Council in the year 2009.

Liquid Waste Management

The city’s liquid waste management activities center on the Baguio Sewage Treatment Plant (BSTP), the operations of which involves 2,000 manholes and 53 kilometers of sewerlines, and cover 66 barangays within the Central Business District (Figure 12). According to the CEPMO (as cited in Cleto 2010), the plant runs on a cost of P14M (\$350,000),

although the fees collected only amount to P4M (\$100,000), the BSTP also operates past its rated capacity (operations are at 9,600 cu m/ day, while rated capacity is at 8,5000 cu m/ day). To tackle this, the city is conducting a comprehensive survey of sewer connections and alternative wastewater disposal practices. The results of this survey will serve as basis for a proposal to expand the BSTP (CEPMO 2010 as cited in Cleto 2010).

Figure 12. Coverage of Baguio Sewage Treatment Plant Operations.



Source: CEPMO 2010.

Natural Disasters and Climate Change

Ecological instability is now apparent with the increasing natural calamities, landslides, erosions, flooding, all these heightening the intensity of future disasters that threatens lives and properties owing to our lack of regard to the environment. Because of the high demand for land, our remaining forests are being stripped-off faster compared with the local limited capacity for reforestation.

Earthquakes

Data and maps on slope stability and existing land use indicate that development, primarily residential, has been allowed in areas of moderate to high potential of slope failure.

The BLISTT planning area is crossed by a number of active fault lines; namely, the Philippine Fault, the Digdig Fault and the San Manuel fault (Baguio CLUP 2002-2008). Baguio's built-up areas are also crossed by active faults, although the 2002-2008 Baguio CLUP states that it is only the San Vicente Fault that shows significant surface manifestations.

The above factors in combination with increasing denudation of the land areas raise the likelihood of significant loss of lives and property in the event of an earthquake such as that experienced in 1990. The area's vulnerability to slope instability was evidenced, again, in late 2009 when Typhoon Pepeng caused several major landslides, roadcuts and massive loss of property and lives in Benguet. According to Amor (2011), the Baguio Zoning Ordinance limits the height of commercial buildings to six stories, which is a policy that has been linked to the collapse of many of the taller buildings in the city during the 1990 Earthquake. A significant number of newer buildings, however, have been allowed to exceed this height limit. Additionally, in 2010, Mayor Mauricio Domogan stated that the LGU does not ban the construction of high-rise structures per se, adding that determination of a building's height depends on soil tests and the utilization of appropriate building materials and engineering strategies (See, 2010).

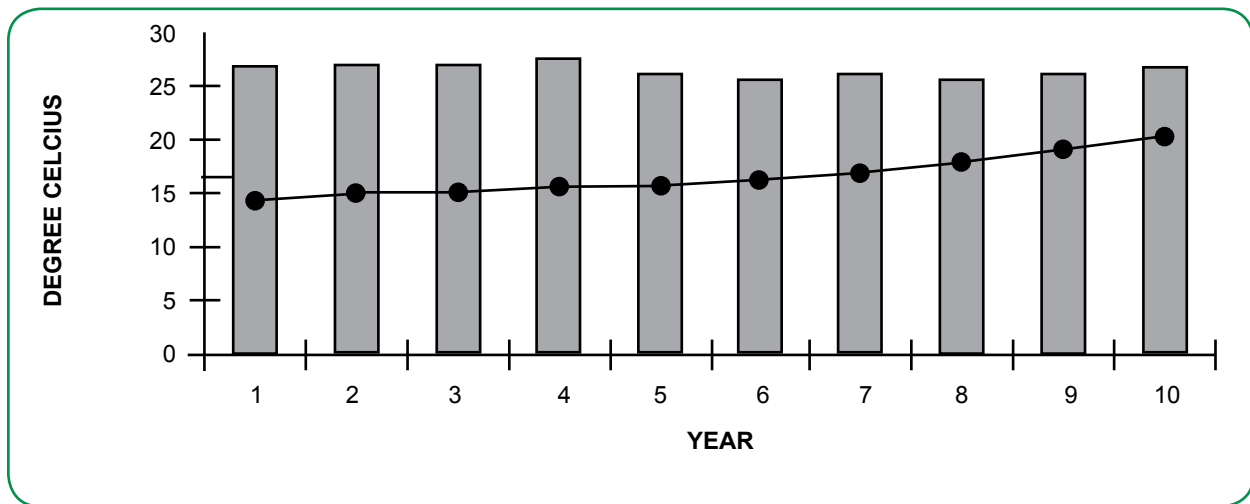
Extreme Weather Events and Climate Change

Metro Baguio's vulnerability to natural disasters is compounded by the global phenomenon of climate change, which "generally refers to the warming of earth's atmosphere at a rate that is unprecedented and attributed to the activities of humankind (Brundtland, Obasi, and Töpfer 2003, as cited in Cleto 2009, 2) and is linked with strong and more frequent typhoons, erratic changes in rainfall pattern and distribution, increases in temperature, flooding (Cabrido, Tanoue, Yap, et al. 2009), other ecological disturbances, and various public health risks (Githeko and Woodward 2003 as cited in Cleto 2009, 2).

Metro Baguio's topography combined with poor development controls, particularly within the city, and conditions of poor health and poverty still evident in certain areas and in certain sectors increase the population's vulnerability to climate change's effects. The CEPMO revealed that Baguio was counted among the World Bank's list of Top Seven Risk-Prone Cities in Asia (Cleto 2010). Additionally, the 2002-2008 CLUP identified climate change as one factor behind the increasing average temperature in Baguio, although it also erroneously attributed climate change to the distinct phenomenon of ozone layer depletion.

The following figure shows the increase in rainfall and temperature in Baguio over the past 10 years:

Figure 13. Observed Temperature Increase in Baguio City.



Source: CEPMO 2010.

Figure 14. Landslide in Baguio City.



Photo credit: CEPMO 2010.

Figure 15. Roadcut along Kennon Road leading to Baguio City



Photo credit: Cordillera Express Padala.

Figure 16. Flood in Baguio City.



Photo credit: CEPMO 2010.

Food security is also threatened by strong typhoons passing over the city: Typhoon Pepeng hit the Cordillera Region in October 2009 and brought about landslides and roadcuts along the Baguio-Bontoc Road or Halsema Highway, effectively closing the route by which most of the vegetables sold in Baguio City's market reach the city. This caused rotting of vegetables in the towns of Sayangan and Buguias, and causes a spike in vegetable prices (Cleto 2010).

Figures 17. Halsema Highway after Typhoon Pepeng.



Photo credit: Cordillera Express Padala.



Figure 18. Man walking with vegetables in area along Halsema Highway, which was closed to vehicular traffic for weeks after Typhoon Pepeng.

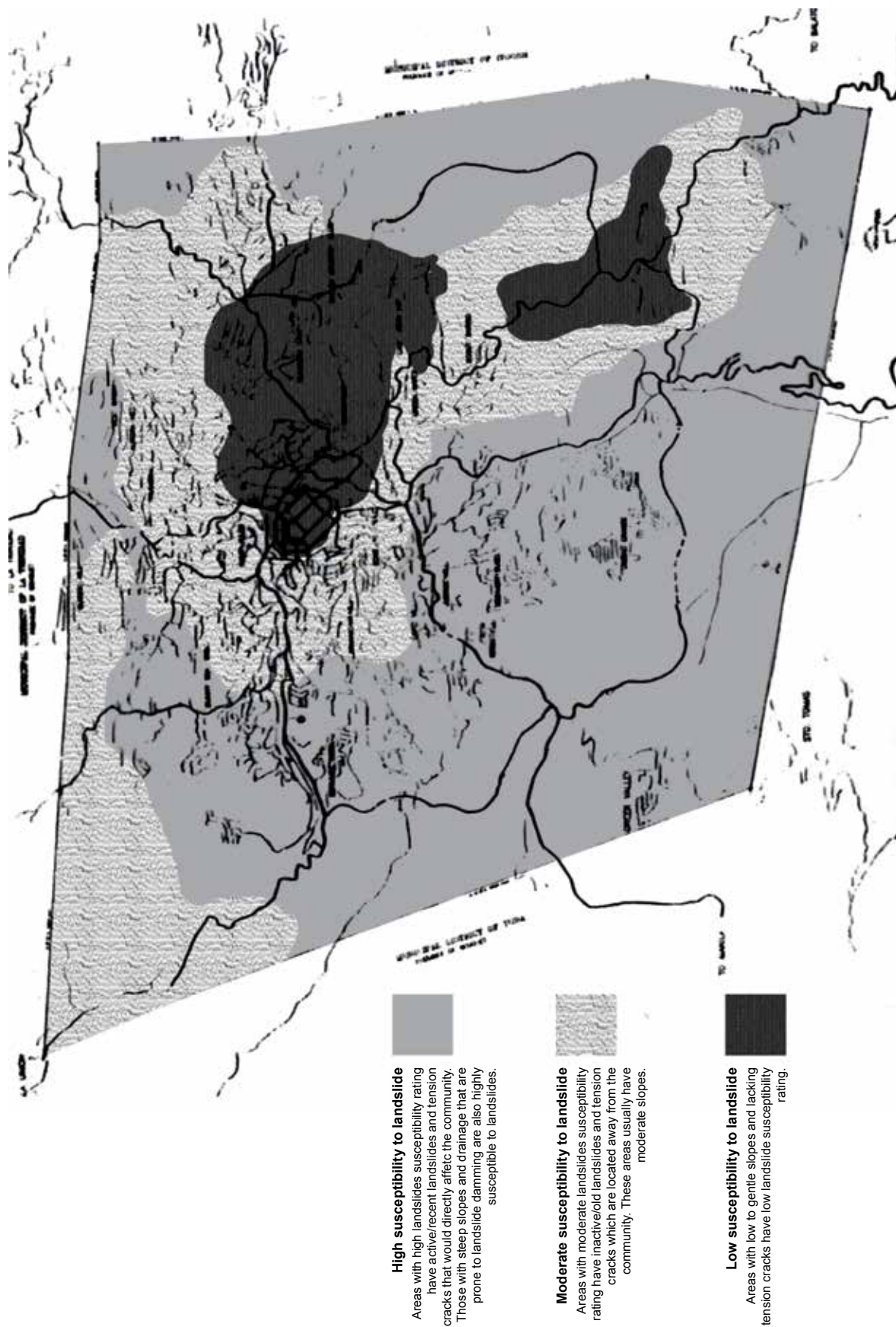
Photo credit: Andrew Dulawan.

The issue of climate change is one that has to be addressed by all development sectors. For the social development sector, focus will have to be given to public health, food security, education—including Environmental Education (EE) and Education for Sustainable Development (ESD) as important components of the education system, and also economic development and an equitable distribution of its benefits, since the most vulnerable to social and environmental upheavals are the poor and marginalized groups in society. The infrastructure sector will be involved in terms of climate-proofing and trying to find ways to reduce damage and casualties that may be wrought by future extreme weather events and, along with the land use and transportation sectors, has a big role in climate change mitigation and reducing Metro Baguio's ecological footprint. Strict development controls are also needed to stop the construction of structures in environmentally critical areas.

The LGU has been criticized, in the past, for what has been perceived as its lack of focus on disaster preparedness. One article published earlier this year stated that the LGU lacks a comprehensive program for disaster management and has been lax in the enforcement of environmental rules—such as the Zoning Ordinance-set height limit of six stories for commercial buildings—that could mitigate disaster (Amor 2011). Amor (2011) also portrays the City Disaster Operations Center (CDOC), the implementing arm of the City Disaster Coordinating Council, as poorly equipped and quotes the Office of Civil Defense-Cordillera (OCD-CAR) regional director in describing the CDOC as more of a “communications group than an operations center.” This same article also quoted Ms. Cordelia Lacsamana of the CEPMO as saying that most of the CDOC's personnel are volunteers and none are sufficiently trained to properly deal with disasters.

Until recently, most local governments to address the issue of climate change had focused on disaster risk management activities, such as the identification of high risk areas seen in Figure 19 and also on recommendations for green building or green template design (Cleto 2010).

Figure 19. Disaster-prone areas in Baguio City.



Source: Based on CEPMO 2010.

According to CEPMO (2010, as cited in Cleto 2010), the city's green building measures have included "green roofs" or landscaping of rooftops in the CBD to enhance sequestration of CO₂, consideration of energy efficiency in building design, and providing for the capture of rainwater. Unfortunately, no data on the actual implementation of these measures was available (Cleto 2010). The CPDO and CEPMO have also been cooperating with the UP School of Urban and Regional Planning, which is working with the Faculty of Design of Kyushu University in Japan on developing a Green Urbanism Plan of Implementation for Baguio City under a Toyota Foundation-funded project. In September 2010, the CPDO and CEPMO participated in a seminar-workshop conducted as part of this project.

More recently, Mayor Domogan created a local task force to lead the development and implementation of Baguio's climate change adaptation plan, in connection with the city's selection as one of the pilot areas for the AsianCitiesAdapt Project coordinated by the International Council for Local Environmental Initiatives (Dacawi 2011). According to Dar (2011), this project focuses on taking an "integrated and cyclical management approach" to decrease the risk of climate change impacts faced by cities.

The need for cooperation between the BLISTT LGUs was highlighted in the press conference for this project: It was emphasized by Councilor Betty Lourdes Tabanda that Baguio has to work with surrounding areas to formulate an appropriate response to climate change and other environmental issues that cross borders and have implications for LGUs outside the city, such as carrying capacity, solid waste management and the management of protected areas (Dar 2011). Councilor Tabanda also recognized the particular dangers posed by the presence of houses on "geo-hazard" areas and said that the city government needs to relocate these structures.

The multinodal development strategy proposed in the draft 2010-2020 CLUP should also help the city mitigate climate change and increase its adaptive capacity. A multinodal development approach would reduce the distance people have to travel to avail of services. This may, in turn, lead to a reduction in trips made via motorized transportation and a corresponding decrease in greenhouse gas emissions.

Typhoon Pepeng also spurred action on a larger scale to increase the Region's preparedness for natural disasters. According to the Public Information Agency (PIA)-CAR (2009), the North Luzon Growth Quadrangle Area (NLGQA) formed a technical working group after said typhoon, in order to examine land use issues that had exacerbated the scale and impact of the disaster. Specific problems identified as part of the group's work include conversion from forest to residential and commercial land use, insufficient zoning, population growth, and solid waste management issues. The incorporation of geohazard maps in the planning documents of LGUs was also recommended. It is interesting to note that one of the issues brought up in the review of land use issues after Typhoon Pepeng was how only 58 out of 76 towns in the Cordillera had formulated their CLUP. Supposedly, one of the reasons for this is that a few LGUs prioritize, instead, the development of an Ancestral Domain Sustainable Development and Protection Plan (ADSDPP).

At the level of the community, disaster preparedness/preparation in the form of measures "for flood control and to avoid landslides" is mentioned in the Barangay Loakan

Proper Development Investment Plan (2007-2010). A community leader of Loakan Proper also said that a flood control project is currently being implemented. In this time of environmental instability, the importance of DRRM measures at the barangay/community level cannot be emphasized enough, especially since the community leaders interviewed mentioned the importance of being self-reliant and not overly dependent on the city government.

Ibaloi Heritage Values

The following paragraphs present several topics under the general heading of “Ibaloi Heritage Values.” For more in-depth discussions of each topic, please refer to Chapter IV of this paper.

The Preservation of Ibaloi Culture

At the city level, relatively new projects connected with the preservation of Ibaloi culture involve the dedication of an area in Burnham Park as the Ibaloi Heritage Garden (as per City Council Resolution 182 s. of 2010), and the designation of February 23 as Ibaloi Day via City Council Resolution 395 S. of 2009 (Palangchao 2011).

Baguio’s Ibaloi community recently celebrated the second Ibaloi Day on February 23 of this year, an event marked by the oath-taking of the “Onjon ni Ivadoy Association, Inc.,” an exhibition of paintings on the Ibaloi way of life, and a presentation of a book on *Ibaloi Conversations on Identity, Community and Well-being* authored by Sofia Olga Anton, Rose Calatan, Jill Cariño, Gina Binayan-Kiswa, Vicky Macay, and Roger Sinot (Palangchao 2011). The first Ibaloi Day celebrated on February 23, 2010 also featured the launch of a *Guidebook to the Ibaloi Language* also authored by Anton and similarly published by Tebtebba.

Efforts towards the preservation of Ibaloi culture are also marked at the community level. One specific initiative that stands out is the *Chiva ni Doakan* project in Barangay Loakan Proper, which a community leader describes as a “culture alive” barangay. This resource person adds that it seems Ibaloi culture and concerns are not receiving more attention with the current makeup of the City Council, where many of those with seats are not necessarily Ibaloi but are from the Mt. Province, and so many cultural preservation initiatives focus more on Igorot culture, in general.

The *Chiva ni Doakan* project is a source of pride for the Loakan Ibaloi community as it is really one of a kind in the Baguio area. An organization recognized by the Sangguniang Barangay of Loakan Proper for its contribution to “preserving the Loakan Proper Culture and Heritage,” the *Chiva ni Doakan* is described as a kind of “School of Living Traditions” where young Ibaloi can learn about their culture and be involved in presenting this on various occasions (Loakan Proper Barangay Profile 2010). According to community leaders, Ibaloi elders used not to “permit” youngsters to hold their instruments but now the elders have taken it upon themselves to teach the younger members of the Ibaloi community about their musical traditions. According to one elder closely linked to the project, teaching the younger Ibaloi about this also helps the children feel proud about who they are and allows them to display this pride to others and show that the Ibaloi do

not want to lose their culture. According to this elder, by guarding this aspect of their culture, they also hope to impart the strength of their resolve in guarding other aspects of Ibaloi life; especially ancestral land:

This is our base – culture and land – this is the life of indigenous peoples. If we don't keep our culture alive, we can't fight for our land.

The links between preservation of Ibaloi culture, ancestral land, and inclusion in the development process needs further examination since, according to interviews with Ibaloi community elders, it is a factor in feelings of marginalization experienced by some members of the community.

Unity within the Ibaloi Community

Residents of the barangays studied take pride in how close-knit their communities are. One community leader of Barangay West Quirino Hill remarked on the value of *Ob-obbo* or mutual help, which she says is a characteristic of the Igorot people that can be observed in how community members assist one another when different households go through difficulties such as sickness or death. According to this source, the bereaved or hard-up households do not have to ask for assistance; their neighbors will take the initiative to go house to house and collect donations, or else contribute a sack of rice or whatever else is needed. She added that even lowlanders who move into the community pick up the practice.

This closeness extends across barangay boundaries as well. As one community leader pointed out, all the Ibaloi elders in Baguio are related even if currently residing in different parts of the city.

III. THE PLANNING PROCESS AND MANAGEMENT OF BAGUIO'S URBAN ECOSYSTEM

The Planning Process at the City Level

According to the 2002-2008 CLUP, the “formal” practice of planning in the City of Baguio began in 1968, with a joint NEC-USAID project to develop a long-range comprehensive development plan that would deal with growing social, environmental and economic problems being experienced in the area. Unfortunately, development in the city still proceeded without strict controls, leading to the situation of urban sprawl that the local government hoped to address with the 2002-2008 CLUP.

The City Planning and Development Office (CPDO) has been updating the 2002-2008 CLUP since last year, and has also been working with other local government offices – the CEPMO and the City Budget Office included – in carrying out an environmental inventory for the updating of the local Environmental Code. A proposed draft 2010-2020 CLUP was presented to barangay captains and representatives from non-governmental organizations in April 2011. According to this presentation, the CPDO used the following process in updating the Baguio CLUP:

- Step 1. Data Gathering;
- Step 2. Data Analysis;
- Step 3. Data Validation;
- Step 4. [formulation of] Sectoral Plans;
- Step 5. Map Preparation and Analysis;
- Step 6. Plan Preparation and Drafting of Zoning Ordinance (ZO);
- Step 7. Presentation and Consultation;
- Step 8. Review and Approval of CLUP and ZO.

According to CPDO staff, Stage 7, which – as mentioned earlier – was carried out in April 2011, was the “first major consultation” held during the CLUP formulation process. Around 80 percent of barangay captains or village heads attended this consultation, along with organizations such as the Baguio-Benguet Chamber of Commerce and Industry, Inc., BB-PICAG, Jaime V. Ongpin Foundation, etc. and other registered NGOs. The same source explained that the barangay captains and registered NGOs were also invited during the visioning workshop held at the beginning of the CLUP updating process.

The 2010-2020 CLUP draft presented in April 2011 to stakeholders was not immediately forwarded to the City Council, since the barangay captains did not feel ready to give their approval to the plan. It was at that point that things became a bit confusing, with CPDO personnel claiming that they had called for and not received any comments on the proposed draft CLUP, while the barangay captains interviewed complained that the CPDO had expected them to support the plan without even being given time to study the document. As of June 2011, however, the CPDO reported having received suggestions from the barangays and, after incorporating these, forwarded the new draft CLUP to the City Council for its approval.

It appears, however, that the LGU has recently felt the need to conduct more extensive consultations with the public and has tapped the academe to assist with this. According to Refuerzo (2011), an initial consultation was held between urban planners, representatives of the academe, and the head of the Council Committee on Urban Planning, Lands, and Housing to develop a consultation framework that will “ensure maximum participation” of stakeholders from the different development sectors. This is a wise move on the part of the Council, given the indications that participation of NGOs and POs (peoples organizations) was limited to accredited organizations that form part of the Local Development Council. According to CPDO personnel, these organizations were the ones invited to the presentation of the proposed updated 2010-2020 CLUP. To make the planning process as participatory as possible, however, it is recommended that even non-accredited organizations not formally part of the LDC be involved in the sectoral committees and contribute to the formulation of sectoral plan and programs (Serote 2005).

As mentioned earlier, the BLISTT concept was a constant consideration in the updating of the Baguio CLUP. The proposed 2010-2020 CLUP also states that one of the city’s “overall” development policies is for Baguio’s land uses to fit with and complement the development roles of the other LISTT LGUs as well as those of the Benguet Province and Cordillera Region.

The Planning Process at the Community Level

There does not appear to be consistency in barangays' formulation of their development plans. Of the communities studied, only one – Barangay Loakan Proper – reported having any formal planning documents (i.e., 2010 Barangay Profile, 2010 Barangay Development Plan, CY 2010 Annual Report per Committee) ready. According to one Barangay Loakan Proper official, the community's development plans and annual accomplishment reports are updated yearly.

The consultation process followed when dealing with issues or problems within the Loakan Proper community is documented in their Barangay Profile 2010, which states the following (Section G. Leadership Pattern and Political System and General Attitude of the People):

Problems and issues in the community are being addressed by the Barangay Officials through meetings or dialogues which takes place mostly in the Barangay Hall. But due to necessity those meetings and dialogues conducted in different places in the barangay depending on its nature and purpose. The barangay officials solve problems or issues brought by the residents through democratic process. The Barangay adopted the officer/s of the day whereby each Kagawad is assigned for a duty in the barangay Hall. This is to attend all the matters brought to the barangay's attention.

Across the three case study communities, one consistent finding is the role of barangay elected officials in identifying the needs/problems of their constituents. For example, infrastructure projects such as road paving are identified based on observed need. Regular barangay assemblies are held, however, for the purpose of discussing ongoing projects and also getting feedback from the members of the community. Barangay officials were also confident that their constituents do not hesitate to approach them with their concerns. There are variations, however, in levels of voluntary participation in barangay assemblies. According to one barangay official of Loakan Proper, barangay officials have to go from purok to purok to encourage the residents to participate and to make sure the people's stands on issues are taken into consideration.

The Community within the City-level Planning Process

Views on communities' participation in the official city development planning process are mixed. While it has become apparent that some community leaders are out of the loop, one community leader did say that level/depth of participation may vary across communities. He felt their community had been adequately involved during his terms as barangay captain. Another community leader said, however, that the city government listens but does not act until election period nears. Thus, she said, it is important for local communities to be self-reliant. One community leader also commented that the local (city) development process is too vulnerable to political maneuvering.

Still, other barangay officials feel that their role in development (or at least as important components of the city) is recognized through the barangay rankings and awards given to barangays with good track records in project/program implementation.

Local Communities and the Management of Baguio's Environment

Interviewees in all the study areas view environmental degradation as a major concern. Among the specific environmental concerns identified by residents of the case study communities were:

- Barangay Loakan Liwanag: pollution in bodies of water, such as creeks, passing through the neighborhood;
- Barangay Loakan Proper: the “deterioration of environmental sanitation,” and the lack of discipline when disposing garbage (Loakan Proper Barangay Profile 2010); solid and liquid waste management; informal settlers; insufficient water supply; pollution in bodies of water linked to the PEZA; cell site pollution; smoke belching of vehicles in the national road passing through Loakan;
- Barangay West Quirino Hill: solid waste management.

A few of the above concerns; namely, pollution of bodies of water linked with the PEZA, pollution from cell sites, and also the smoke-belching of vehicles on the national road through Loakan have been brought to the attention of the city government and concerned government agencies. Interviewees, however, noted that their concerns take quite a while to be acted upon, if acted upon at all and so, where possible, they try to develop their own solutions to neighborhood problems. In connection with solid waste management, for example – apart from the exemplary solid waste management practices previously discussed – one community leader's project involved establishment of a community compost pit and garden in Barangay Loakan Liwanag. One resident of Barangay Quirino Hill has long been using biogas (from his piggeries) as fuel for cooking, etc. In Barangay Loakan Proper, clean up drives and greening activities are organized in cooperation with adjacent barangays and with the PEZA administration (Loakan Proper Barangay Profile 2010).

Overall, community leaders expressed the view that barangays have a major role in managing the local environment, particularly in connection with maintaining cleanliness and reforestation.

In addition to the involvement of barangays and neighborhoods in the management of Baguio's urban environment, several local organizations and the academic community have also developed their own environmental projects/programs.

One project that has received quite a lot of attention is the Eco-walk environmental education project conceptualized by Baguio media and inspired by the Ifugao *muyong* system of forest management (Refuerzo 2008). CEPMO has also recently revisited their interest in learning about the biogas and vermicomposting methods of waste management from Tebtebba.

Academic institutions are also continuously involved in environmental and land management research, including those under the UP Baguio Cordillera Studies Center's Climate Change Program that aims to identify and promote concrete approaches to climate change at the academic and community level (Climate Change Program n.d.). The Baguio LGU has also cooperated with the academe on several planning projects, most recently on the updating of the CLUP: as mentioned above, UP Baguio was recently tapped to assist with consultations for the updating of the CLUP. The University of the

Cordilleras also formulated a Comprehensive Master Development Plan for Burnham Park in 2010 (UC “Gives Back” 2010).

The LGU recognizes the importance of community participation in the management of Baguio’s urban environment. The 2002-2008 CLUP was meant to encourage “environmental conservation, protection, and participation by the constituents” but, apparently, much work is still needed on this front since even barangay leaders who are formal members of the LDC feel excluded from the official planning and development process. It is also important to recognize that development planning may appear participatory and inclusive on the surface and still avoid giving local people a meaningful “say” in the final outcome; particularly when there is pressure for them to support a particular development strategy or project. A historical example of this is how the Export Processing Zone Authority (precursor to PEZA) came to be established in the Loakan area during the time of former President Marcos. According to interviewees, consultations were surely carried out for the project, but the people were afraid to voice out their concerns and/or objections.

Baguio's indigenous Peoples and the Planning and Implementation of Environmental Plans and Policies

The most important and sensitive issue concerning Baguio’s indigenous peoples and the management of the local environment is that of ancestral land/domain. Not many local planning personnel will speak openly about this and opinion is still divided on how the LGU should proceed on this issue, even among Baguio “old-timers.” Even the official planning documents at the city level make bare mention of this complicated and contentious topic. Yet, it is difficult to see how the Ibaloi of Baguio can ever be truly involved in the “official” planning process without recognition of their right to land.

The previously mentioned Eco-Walk Project, which was developed based on a traditional method of environmental management, illustrates another way by which indigenous peoples and culture may be involved in the management of Baguio’s urban environment. Said project is a rare example of tapping indigenous/traditional knowledge for a city-level initiative.

At present, it appears that planning is still too top-down. The LGU could go down to the community level and see what it can learn from there and also incorporate these in environmental management strategies. There is much to be learned from local communities and from the city’s indigenous peoples.

For example, according to an interview with Ibaloi elder, the practice of building in unstable areas was not in evidence among Baguio’s early Ibalois. She stated that the original people of Loakan did not erect structures in steep slopes or beside creeks, which they believed were homes of *ampasit* or spirits that could bring sickness to trespassers. But then, she said, outsiders moved into Baguio, squatted on the land and then resold these to other outsiders. This is supported by the 2002-2008 CLUP, which states that building in high-risk areas only accompanied the phenomenon of urban sprawl, and provides one example of how traditional knowledge would have served the city well, had it been applied as a development guide.

Overall, the role of indigenous peoples in development process seems to be most significant at the community level, where some leaders voice doubt that city officials, although apparently “listening” to indigenous peoples’ concerns, actually consider these as important factors when making development decisions. Community leaders interviewed expressed confidence that Baguio’s indigenous peoples can be tapped as partners in the maintenance of protected areas that extend into ancestral domain/land.

Key Informant Interview results also suggest that Ibaloi elders in communities such as Loakan still have an important role in the barangay council and, even if not among the elected officials, make it a point to attend barangay assemblies or meetings and do not hesitate to express their opinions on development projects that enter their communities.

Another indication of the importance given to indigenous peoples in Barangay Loakan Proper is the content of their development plans, beginning with the Vision, Mission, and Core Values listed in this community’s Barangay Profile 2010 (page 4):

Vision: *The cultural hub of Baguio where the Igorot heritage is alive.*

Mission: *We will be an environmentalist, religious and ethnical community through proper management, transparency, education and continuous practice of customs and traditions to preserve the Igorot culture.*

Core Values: *We are dedicated to sincere environmental solutions, teamwork among officials, NGOs, GOs and the whole community to continuously enrich our cultural heritage.*

Versions of history are also indications of the emphasis given to different aspects of development. The relative importance given to the role Baguio’s Ibalois have had in the city’s development vs the importance given to their role in communities such as Barangay Loakan Proper makes this immediately clear. While the loss of Baguio Ibaloi ancestral land and, linked to this, their increasing marginalization in the city’s development, is barely touched on (and only spoken of with great discomfort) at the city level, the community’s story, as told in Loakan Proper’s Barangay Profile (2010), focuses mainly on the history of Igorots in their community and opens with the following statement (page 5):

Loakan, even before the coming of the Spaniards was an Ibaloi settlement with its own leaders and form of worship (Loakan Proper Barangay Profile, 2010).

The document then proceeds with an extensive retelling of the displacement of Ibalois in the name of outside-imposed development, as in the case of the construction and establishment of the Philippine Military Academy and EPZA (Export Processing Zone Authority). This accounting of history is supported by research conducted within the academic community, such as Cariño’s study on the effect that EPZA had on the Loakan’s families. According to Cariño (1986) the establishment of EPZA resulted in a loss of livelihood, after locals lost access to areas from which they had used to gather limestone. Additionally, the type of replacement housing offered to displaced families was not suited to their traditional housing patterns.

As previously mentioned, the case of EPZA is one example of how the planning process can appear “participatory” only in form: A local leader interviewed said that

although they could not say they had not been “consulted” before EPZA’s construction, they were afraid to stand up to the government and couldn’t really object to the project.

IV. BAGUIO IBALOI HERITAGE VALUES (BY JOAQUIN K. CARIÑO)

A pressing matter which should be addressed by any urban planning initiative for Baguio is the matter of Ibaloi ancestral land rights over the Baguio town site, and the giving of due recognition to Baguio’s Ibaloi heritage. Unless this issue is addressed decisively and satisfactorily for all stakeholders, especially the native Ibaloi families of Baguio, then this will remain a sore point in the grand narrative of Baguio and a hindrance to the advancement towards a better Baguio.

Given Baguio City’s limited land area, calls for urban planning on a wider scale, such as the Baguio-La Trinidad-Itogon-Sablan-Tuba-Tublay or BLISTT framework for development, have gained popularity and advocates. Such wider urban planning will entail working together with the outlying towns which are, like Baguio, Ibaloi areas. Moving forward, an expanding Metro Baguio will all the more highlight the need to satisfactorily address the matter of Ibaloi ancestral land claims and the giving of a proper place to the Ibaloi heritage values of Baguio and its outlying environs.

Role of the Ibaloi in the Development of Baguio

Ever since being displaced by the American hill station built on their homeland at the turn of the 19th century, the native Baguio Ibaloi had a marginal role in the development of the city. Physically pushed to the fringes by the unilateral appropriation of prime land upon which to build a hill station, they became suppressed witnesses to the great transformations that took place as a modern city emerged from their ancestral land.

The Americans directly presided over the development of the hill station. From being masters in their own land, the Ibaloi now had to bow to the wishes of their colonial masters. As a means to gain the cooperation of the Ibaloi leaders, and to exploit the influence that these Ibaloi leaders exercised over the Ibaloi populace, the Americans set up an Igorot Advisory Council, a token structure in the bureaucracy with no real powers, to give a semblance of Ibaloi participation in the affairs of government.

The leading Ibaloi families embraced the western culture. Just like their upper and middle class counterparts in the wider Philippine nation, they became “brown Americans,” educated in American schools and worshipping the white man’s god. Their contribution to the development of what Baguio has become today can be likened to the contribution of the “Baguio Old-timers” discussed below.

Except for a few notable exceptions, like Dr. Jose M. Cariño who was appointed City Mayor of Baguio after World War II and Andres Acop Cosalan Sr. who was a multi-term Congressman of the then lone congressional district of Baguio-Benguet, the Ibaloi held no high position in the corridors of power of Baguio City. And even in the case of these few notable exceptions, there was no Baguio Ibaloi agenda articulated and advanced.

It was only when the concept of the right to self-determination of indigenous peoples gained popularity, along with the parallel ideas of ancestral lands and domains, did the beginnings of a Baguio Ibaloi agenda take shape.

Baguio Old-Timers

Employment in the colonial bureaucracy as well as mining ventures in Benguet opened an avenue by which lowlanders and expatriates were enticed to come up and make Baguio their home. Thus was formed a group of non-Ibaloi Baguio pioneers who are now considered “Baguio Old-timers.”

These Baguio old-timers have been here ever since the American colonial period and have played a big role in the development of what Baguio is today. They consider Baguio as their home and their city and they will continue to play a major role in the charting of Baguio’s future.

Igorot Settlers

Non-Ibaloi Igorot settlers now comprise a major segment of Baguio’s population. The leading families among them were successful in business, politics or their professions and were able to acquire and own some land to build their houses on. But a majority of them are informal settlers in Baguio’s urban poor communities.

Starting in the mid to late 1960s, their numbers swelled as the squatting problem in the city grew. To this day, there is no end in sight for this problem as a lack of livelihood in the rural areas of the Cordillera push a growing number of people to seek their fortune in the regional urban center, Baguio City.

Baguio’s Local Government

Since the end of WWII up to the present, we can say that the local government of Baguio has been in the hands of the Baguio old-timers and the Igorot settlers. The Baguio old-timers held the reins of local governance from 1950 up to the late 1980s, with the likes of Alfonso Tabora Sr., Norberto de Guzman, Luis Lardizabal, and Ernesto Bueno serving as mayor of the city. With the assumption of Mauricio Domogan as mayor in the late 80s, the Igorot settlers held sway with non-Ibaloi Igorots holding the top executive position and many of the city council’s seats.

Ever since the issue of ancestral lands emerged, it has been the stand of the city government of Baguio to oppose the granting of ancestral land titles within the Baguio town site. At first they opposed the granting of ancestral lands within the Baguio town site on the ground that Baguio is governed by its charter and is therefore exempt from the provisions of the Indigenous Peoples’ Rights Act (IPRA).

When the Supreme Court gave an opinion regarding this matter, the city government accepted ancestral lands within Baguio but opposed the granting of ancestral lands over forest lands, government reservations and institutional lands thereby in effect still main-

taining its original position opposing ancestral land claims within the Baguio town site.

The recent city council resolution setting aside a portion of Burnham Park for an Ibaloi Park is a symbolic victory for the Baguio Ibaloi. This signals a heightened awareness of Baguio's local history and Ibaloi heritage, not only among the Ibaloi themselves but more so among the general population.

This symbolic victory however can turn out to be a hollow victory unless the crucial concern of the ancestral land claims within the Baguio town site is resolved satisfactorily. Moreover, with no budget allocation from the city for the improvement of the area, the Ibaloi Park may end up as an idle land in the midst of the city's premier park.

The Baguio Ibaloi Struggle for Ancestral Lands

When the government started accepting claims for ancestral lands through a Task Force of the Department of Environment and Natural Resource (DENR) in 1990, a window was opened for the Baguio Ibaloi to reclaim and document their ancestral lands. Thus began an articulation of a Baguio Ibaloi agenda.

The documentation of the ancestral land claims entailed some research and a heightened awareness of Baguio's history. And when the local government voiced a blanket opposition to such claims within the Baguio town site, the Baguio Ibaloi responded with a higher level of unity and a common agenda.

Among the initial ancestral land claims filed by individual Baguio Ibaloi clans or families were some which claimed three-fourths (3/4) of the city, claims over titled properties, claims over public monuments/buildings and parks, and overlapping claims of different Ibaloi families or branches. The local government and the Baguio old-timers were naturally aghast at this. It seemed that the recognition of ancestral land rights would throw the city into chaos.

Moreover, some questionable awards of ancestral land titles tended to taint all ancestral land claims including the legitimate and proper ones. A case in point, ancestral lands cannot be sold according to a provision of the IPRA. But some ancestral lands within the city have been sold many times over even before they have been awarded to the claimants.

Ibaloi Unity

With the articulation of a Baguio Ibaloi agenda came a corresponding expression of Ibaloi unity. During the early stages of ancestral land claims, it was at first the individual families and clans which organized. As the need for a wider unity became apparent, higher levels of organizations appeared such as city-wide organizations of Ibaloi claimants.

But as different forms of organization emerged, so too were cracks in the harmony exposed. Within clans, there were branches, which could not see eye to eye. There were disagreements on how to go about advancing the claims. Family feuds were once again put in the limelight.

But a deeper look at these misunderstandings will reveal them for what they are: misunderstandings. These are just par for the course for any organization and bode well for a stronger unity in the future.

Lessons Learned

An important lesson here is that government agencies, including the local government, are not necessarily the enemy here. They can be won over with a clarification of intents and objectives.

Moreover, efforts should be made not to alienate the Baguio old-timers. Many old-timers with titled properties in the city felt threatened when ancestral land claims were filed covering their properties. Care should be exercised so as not to unnecessarily agitate some sectors to turn against you.

Another important lesson is that there is no place for corruption, bribery or going through “fixers” in the processing of ancestral land claims. Such practices taint the whole process and will result in more harm than good to the Baguio Ibaloi struggle for ancestral lands.

But the decisive factor will remain to be the united efforts of the Baguio Ibaloi. You cannot expect the local government, the Baguio old-timers, the Igorot settlers or even a sympathetic National Commission on Indigenous Peoples (NCIP) to take up the cudgels for you and grant your ancestral lands in a silver platter. The recognition of ancestral land rights is a battle to be won and it shall be won by the Baguio Ibaloi themselves.

Way Forward

The Baguio Ibaloi should strive for greater unity in mind and in action. Petty differences and personality clashes should be set aside for the greater good. As much as possible, the Ibaloi should speak with one voice at all levels – the family, clan, multi-clan and citywide levels.

Indigenous mechanisms to engender unity are available. Cleansing rituals, or bull sessions, wherein all parties speak their mind and criticize one another, presided over by native priests or priestesses should be encouraged at all levels. Achieving unity and the holding of cleansing rituals shall be victories in themselves.

Going your own separate ways or *kanya-kanya* should be discouraged.

The Baguio old-timers should be won over. Ancestral land claims over titled properties should be set aside and untitled lands with the least adversity should be prioritized. Identifying vacant lands and revising claims to exclude titled properties should be a guideline to be followed.

Such ancestral land claims covering “over three-fourths of the city” should be revised so as not to unduly alarm titled property owners. Claims over public buildings, monuments, parks and institutions should have attached project proposals detailing the plans if and when ancestral land rights are recognized.

Dialogues with the local government and other government agencies should be initiated with the end in view of coming up with agreements regarding particular ancestral land claims. As the author Dan Simmons said, "It occurs to me that our survival may depend upon our talking to one another."

Public-Private-Partnerships or PPPs can be the end result of such dialogues with the ancestral land claimant agreeing to particular land use arrangements as long as ancestral land rights are recognized.

Mediation meetings among all stakeholders of particular ancestral land claims, including local government, national government agencies, Baguio old-timers and Igorot settlers, presided over by the NCIP should be encouraged. Formal agreements and/or arrangements regarding the disposition of the particular ancestral land claim should be the end in view of such mediation meetings.

Regional Autonomy and Native Title

The 24th anniversary of the founding of the Cordillera Administrative Region was celebrated last July 15, 2011 with much fanfare centering around the theme, "One Cordillera for Regional Development and Autonomy."

Spearheaded by the Regional Development Council, the Cordillera Association of Regional Executives and local government executives and congressmen, the celebration capped a renewed campaign for a Cordillera Autonomous Region by seemingly united regional and local government bureaucracies.

Implicit in an advocacy of autonomy is a belief in and recognition of native title.

It is therefore ironic that the officials who sought the exclusion of Baguio from the coverage of IPRA and who continue to oppose the granting of ancestral land titles to the native Ibaloi of Baguio, are the same officials who are now spearheading the campaign for regional autonomy.

It should be made clear that regional autonomy and native title are just different expressions of the self-determination of indigenous peoples. The campaign for regional autonomy may yet be turned into an advantage for the struggle for the recognition of Ibaloi ancestral land rights within the Baguio town site.

V. CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings and Analyses, Major Issues

State of Baguio's Urban Ecosystem

It is generally recognized that Baguio City is overpopulated and that its carrying capacity has been exceeded. How to achieve sustainable development in Metro Baguio and how to address existing environmental problems connected to the city's uncontrolled development (such as poor solid waste management, air and water pollution, denudation of forest areas) are the primary issues that must be addressed by any comprehensive guide for the city's further development.

The city does not appear to have a good track record in the effective implementation of its Comprehensive Land Use Plan. An LGU's development priorities are revealed not only in its approved land use and development plans but also, and perhaps more clearly, by the programs and projects that receive funding (as revealed by a LGU's Investment Programs) and are actually translated into action. Any plan crafted by the city will be useless unless owned by the people and backed by the firm support of Baguio's elected officials. This is also true of the BLISTT concept – unless Baguio vigorously supports and tries to build momentum behind this approach, the re-conceptualized BLISTT will follow in the footsteps of the failed original BLIST framework.

Local Development Planning, Community Participation and Community-led Development

The study's findings indicate that local communities may not consider themselves as meaningfully involved in city-level planning. Additionally, it appears that barangays are not consistent in formulating their Barangay Development Plans, which can also serve as inputs to city-level plans.

Although the city government recognizes good practices at the community level through awards such as the "Best Performing Barangay," and "Best Performing Barangay Nutrition Council," etc., until recently, best practices at the community level did not seem to be picked up and incorporated into development strategies at the city level. It would benefit the city as a whole to take advantage of local community solutions to environmental problems and utilize more diverse sources of knowledge in working towards sustainable development.

The study and utilization of community-based practices and local knowledge that may be applied on a broader scale would also allow communities to have a bigger, more meaningful role in the City Planning and Development process, particularly since even community leaders (such as Barangay Heads who are members of the Local Development Council) do not always feel as if their views/concerns are given due consideration at the city-level.

Ibaloi Heritage Values

City Development Plans, at present, do not include any data on the ethnic makeup of Baguio's population. These plans also hardly mention Baguio's indigenous peoples, in general, and even the very significant issue of ancestral land/domain claims within the city, in particular.

Despite this, the meaningful participation of indigenous constituents is still evident in some communities, particularly traditional ones such as Barangays Loakan Proper and Loakan Liwanag. The development plans of such communities, unlike those at the city level, highlight the pride people have in their Igorot and Ibaloi heritage. Barangay Loakan Proper is also home to an exemplary community-led initiative that involves training the youth in traditional Ibaloi songs and dances.

Recommendations

The following recommendations are made based on the findings and discussion presented above:

1. Encourage further multi-disciplinary research on Baguio's urban ecosystem and the management of BLISTT environment, with focus on utilizing local expertise/knowledge of locals who are intimately familiar with development issues in the city;
2. Encourage greater multisectoral participation in formulating Baguio City's and Metro Baguio's development plans. A good first step is working with the academe in producing plans such as the Burnham Development Plan and also to assist in carrying out effective consultations with the community;
3. Encourage local government to pay more attention to/include other environmental strategies on a community level in addition to the proposed strategy (in the proposed updated 2010-2010 CLUP) of promoting barangay "true nature" parks mentioned, and also look into what can be learned *from* communities instead of just the other way around. Tap sources such as Ms. Geraldine Doco of ORNUS, who is knowledgeable on how indigenous migrant communities can help in waste management efforts in the city;
4. Future research directions that can be included among points for discussion in the seminar/workshop slated for later in the year:
 - a. Wider research into methods to increase the participation of stakeholders in the local planning process, involving both traditional and emerging or new technology such as the Internet. For example, it has been suggested that the internet can be used to offer communities actual physical views—even in 3D—of building designs or plans and also allow stakeholders to send in comments in real time and pinned to specific locations in the 3D or even just a map model (Peach 2010),
 - b. More research on how to enhance the role of local communities in the Baguio and Metro Baguio development process and environmental management, particularly since advocates of "smart and green" growth have been promoting the idea of communities having a proactive approach to sustainability, According

- to Myric (n.d., as cited in Benfield 2010), the reinvention of regions can begin from the hearts of local communities, spreading outwards,
- c. Further research on disaster risk reduction and management (DRRM), climate change mitigation and adaption, with focus on the more vulnerable sectors of society, in support of existing initiatives and in collaboration with other institutions. Research can also focus on DRRM and climate change mitigation and adaptation from the community perspective/at the community level, since it appears local communities may lack awareness of the unique challenges posed by environmental phenomena such as climate change and what measures they must take to prepare for the natural disasters they may have to face in future,
 - d. Given the results of the study, it appears that more in-depth study is needed on the links between the preservation of Ibaloi culture, ancestral land, and inclusion in the development process. Interviews with Ibaloi community elders revealed that the thorny issues of ancestral land and respect for culture are factors that contribute to feelings of marginalization experienced by some members of the community. Work on this can be done in coordination with other institutions that have looked into related issues,
 - e. Given the observed lack of coordination between related government agencies/departments, sometimes even within one office and also between leaders of environmental initiatives that apparently share the same goals, one future approach can focus on the coordination of different environmental efforts so that resources – including human resources – are used more efficiently.

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Waste Management in the Urban Ecosystem: The Case of Baguio City and the Municipality of La Trinidad

By Maria Lorena C. Cleto



I. BACKGROUND

Taking off from the Scoping Study on Baguio's Urban Ecosystem that was conducted in 2011 and presented in the Study Workshop on Baguio and La Trinidad's Urban Ecosystem and People's Well-being held on November 21, 2011, the present study took a closer look at the waste generation and management aspect of the Urban Ecosystem, which – in light of recent events and based on the findings of previous study – appears to be one of the biggest environmental challenges currently being faced in the study areas.

II. OBJECTIVES OF THE STUDY

The study examined solid and liquid waste generation issues in Baguio City and the Municipality of La Trinidad, as well as the waste management policies and strategies – those planned and those actually implemented – at the city/municipality and community levels. Based on this review of issues, policies, and strategies, this report contains the following:

- a. The latest available information on solid and liquid waste generation in the study areas;
- b. Policies and strategies relating to the management of solid and liquid waste at the city/municipality and community levels, and a critique of their development and actual implementation;

- c. A discussion of community participation in the identification of the most pressing waste management issues and the strategies developed to address these;
- d. Given the study's focus on the Ecosystem Approach, a discussion of how this may be applied, particularly regarding scale, in dealing with solid and liquid waste management in the context of the study areas.

III. METHODOLOGY

The study sought to fulfill the research objectives through case studies of Solid and Liquid Waste Management in Baguio City and the Municipality of La Trinidad.

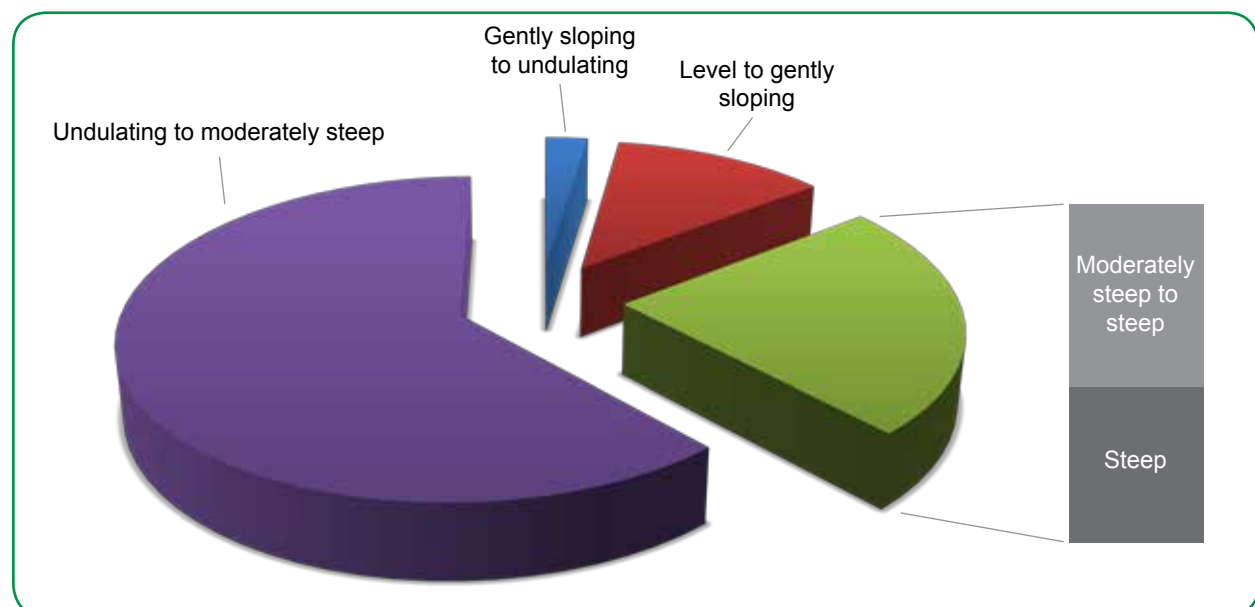
The Study Areas

Baguio City

Baguio City in northern Philippines is a highly urbanized city that, according to its 2002-2008 Comprehensive Land Use Plan (CLUP) (as cited in Cleto 2011), has developed into a center of commercial trading, regional administration, industry, education, and tourism. The city's area is 57.49 square kilometers (Baguio City Socioeconomic Profile 2007) covering 129 barangays/villages. According to the latest figures, Baguio City's population was approximately 325,880 in 2010 and is projected to increase to 419,371 by 2020 ("Proposed Updated" 2011).

The city's terrain is predominantly of undulating to moderately steep slope, which the 2002-2008 Baguio CLUP (as cited in Cleto 2011) characterizes as having a slope grade of 19-30 percent.

Figure 1. Baguio City Slope, by Percent.



The levels of slope stability in different areas of the city can be viewed in Figure 3 below. Slope grade and potential for failure have an impact on which areas are suitable for development, given the potential danger of landslides (“US Search and Rescue Taskforce,” n.d. as cited in Cleto 2011). It can be seen in the slope stability map that most areas of undulating to moderately steep slope have “moderate” slope failure potential.

Land Use

At present, Baguio City is dominated by its residential land use, which takes up 61 percent of its total land area (“Proposed Updated” 2011). The next largest amount of land is taken up by “Vacant Forested Area” (12.38%); followed by Commercial Land Use (2.57%). Forest/Watershed Reserves occupy 2.54 percent.

Table 1. Existing Land Use, Baguio City 2010.

Land Uses	Class	Existing Land Area	Proposed Land Area
Residential	R1	1778.98	1994.80
	R2	952.38	983.38
	R3	779.95	540.60
	Total	3511.30	3518.78
Commercial	C1	74.60	71.08
	C2	30.32	37.10
	C3	42.89	42.89
	Total	147.82	151.07
Industrial		42.86	42.86
Institutional		398.61	412.80
Parks		70.68	70.68
Forest/Watershed Reserves		146.26	146.26
BAI Reservation		95.02	95.02
Vacant Forested Area		711.90	661.77
Camp John Hay		570	570
Abattoir		4.43	4.43
Cemetery		12.78	12.78
Airport		27.44	27.44
Utilities		9.90	35.11
Total		5,749.00	5,749.00

The Municipality of La Trinidad

La Trinidad is a first-class municipality and the provincial capital of Benguet Province. According to its 1998-2008 Comprehensive Land Use Plan (CLUP), the municipality covers a land area of 8,079.5125 hectares (2.7% of total province area) and can be subdivided into 16 barangays. The urban areas in La Trinidad amount to just 2,740.68 hectares or 33.92 percent of the total municipal land area.

As of August 2007, La Trinidad had a population of 97,810 (NSCB 2010). The municipality's growth rate was pegged at 4.04 percent in the 1998-2008 CLUP, while the population density was at 10 persons/hectare. The local government noted that at least part of the increase in population could be linked to a high rate of "spillover" and in-migration from Baguio City (La Trinidad 1998; CLUP 2008). The latest CLUP (1998-2008) also identifies several ethnic groups that make their home in La Trinidad: included among these are the Kankana-ey (30% of the local population) and Ibaloi (23% of the local population).

Land Use

Agricultural and forest areas were identified in the Municipality of La Trinidad's Physical Profile (2010) as its most dominant land uses. Only 10.12 percent of La Trinidad's land area was built up in the year 2000, although the local government intended to increase this to 14.88 percent by the year 2010 along with an almost 10 percent decrease in land set aside for agricultural land use – although a small increase in forested areas was also proposed.

Table 2. Existing and Proposed Land Use, La Trinidad 2000-2010.

Land Classification	Existing Land Use		Proposed Land Use	
	Yr. 2000	%	Yr. 2010	%
1. Built-up Area	8.172	10.12	12.305	14.88
2. Agriculture	31.082	38.47	23.036	28.54
• SAFDZ			(2.598)	(3.22)
• Agriculture			(20.360)	(25.20)
• Agro-Industrial			(0.078)	(0.10)
3. Forest	31.908	39.49	42.224	52.25
• Communal Forests	(1.704)	(2.11)	(1.704)	(2.11)
» Alno CF: 0.308				
» Alapang CF: 0.360				
» Puguis CF: 0.482				
» Shilan CF: 0.554				
• Watershed	(2.379)	(2.94)	(2.402)	(2.97)
» Busol Watershed	(2.250)		(2.50)	
» BSU Watershed	(0.129)		(0.152)	
• Agro-Forest	(0.230)	(1.52)	(14.566)	(18.02)
• Unclassified Public Forest				
4. Grassland	8.756	10.83		

5. Special Use	0.084	0.10	0.402	0.52
6. Parks & Recreation	-	-	2.018	2.50
7. Rivers/Creeks	0.795	0.980	0.792	0.98
TOTAL	80.795	100.00	80.795	100.00

Source: La Trinidad Physical Profile 2010.

Table 3. Existing Land Use, La Trinidad 2003.

Land Classification	Existing Land Use		Proposed Land Use	
	Yr. 2000	%	Yr. 2010	%
1. Residential	6.624	66.15	7.630	54.31
2. Commercial	0.531	5.14	1.540	10.96
3. Agro-Industrial	-	-	0.078	0.55
4. Institutional	0.814	7.88	1.427	10.15
5. Special Use	0.141	1.36	0.298	2.12
6. Roads	1.951	18.89	2.813	20.02
7. River & Creeks	0.264	2.55	0.264	1.79
TOTAL	9.987	100.00	14.601	100.00

Source: La Trinidad Physical Profile 2010.

Data Collection

The primary research method used was the Key Informant Interview with relevant local government officials, community members, and other entities involved with solid and liquid waste management in Baguio City and the Municipality of La Trinidad.

The following secondary research methods were also utilized before, during, and after primary data collection in Baguio City and the Municipality of La Trinidad:

- Document reviews of relevant policies and regulations, and city-/municipality-level planning documents;
- Document reviews of existing research, articles and documentation of waste management in the study areas;¹
- Document reviews of existing research and articles on the Ecosystem Approach, and best practices in waste management that may be suitable for application in the study areas.

¹ The articles reviewed for the present study were those published as of May 2012.

IV. RESULTS AND DISCUSSION

Waste Management and the Ecosystem Approach

The Ecosystems Approach as applied to the management of urban area involves trying to understand urban areas as open systems that have inputs of energy and materials and corresponding outputs, which generally increase with time and increasing development (Newman 2000). According to an article on viewing and managing the city as an ecosystem, it should be possible to analyze the pathways through which these inputs and outputs (or what would normally be considered as “waste”) pass and, based on these, formulate management systems that will allow more efficient energy use, recycling of “waste” through considering these as valuable materials, and conserving and even producing energy (Newman 2000).

Said approach was adopted by the fifth Conference of the Parties (COP5) of the UN Convention on Biological Diversity in May 2000, and has been elaborated into 12 Principles and five Operational Guidelines (Smith and Maltby 2012).

The Twelve Principles or Tasks are as follows (The Ecosystem Approach Advanced User Guide, n.d., 4):

- Task 1 Involving all members of society in decisions associated with the management of land, water and living resources;
- Task 2 Ensuring management is decentralized to the lowest appropriate level;
- Task 4 Ensuring the economic context can be understood;
- Task 6 Considering what measures can be taken to ensure ecosystems are managed within the limits of their functioning;
- Task 9 Using adaptive management to address the problem(s) identified
- Task 10 Seeking an appropriate balance between, and integration of, conservation and use of biological diversity;
- Task 11 Ensuring all forms of relevant knowledge including, scientific, indigenous and local knowledge, innovations and practices are included;
- Task 12 Facilitating the involvement of all stakeholders including all sectors of society and scientific disciplines.

Waste Generation and Management Strategies in the Study Areas

a. Baguio City

Solid Waste

Based on Republic Act 9003 or the Ecological Solid Waste Management Act of 2000, which is the legal framework for solid waste management (SWM) in the Philippines, Local Government Units (LGUs) are supposed to institutionalize, in their respective territories, the following components for an Ecological Solid Waste Management System (RA 9003; RA 9003 IRR):

- Waste segregation primarily at source (Section 21);
- Mandatory segregated collection (Section 1 Rule X, of IRR);
- Establishment of LGU Materials Recovery Facilities per barangay or cluster of barangays (Section 32); and,
- prohibition of the use of open dumps for solid waste, provided that every LGU converts its open dumps into controlled dumps within three (3) years after the effectivity of RA 9003 and, further, that controlled dumps will be disallowed five (5) years after the effectivity of the Act, in favour of Sanitary Landfills (Section 37).

Over a decade since RA 9003's enactment, however, numerous LGUs all over the country still struggle to comply with the above directives. In the case of the study areas, the Municipality of La Trinidad is the only LGU in the province of Benguet that has constructed a Sanitary Landfill, while Baguio City's solid waste management problems have only intensified with the passing of time.

A major turning point in Baguio's "garbage woes" arrived in late August 2011 when the large amount of rainfall generated by Typhoon Mina combined with the weight of the accumulated garbage in Baguio's "old dumpsite" in Barangay Irisan (see Figure 2) to break through the dumpsite's 8-meter high, approximately 1.5 meter thick retaining wall (Beltran and Agreda 2011). The resulting trash slide cost the communities of Tuba and Irisan the lives of several residents and significant damage to property, blocked the section of Asin Road lying below the dumpsite and, according to Cabreza (2012), polluted the groundwater supplies of Aringay, La Union and Tuba, Benguet.

Figure 2. Irisan dumpsite.

The Baguio Trash Slide generated a barrage of negative publicity for the local government, its waste management strategies, and its failure to protect the well-being of its residents and those of neighboring areas by its inefficiency in implementing RA 9003's mandates.

Additionally, a group represented by Aringay's Vice Mayor Eric Sibuma, Benguet Representative Ronald Cosalan, and National Artist Ben Cabrera filed a petition at the Supreme Court for a Writ of Kalikasan and Temporary Environmental Protection Order (TEPO) to be issued against several of Baguio City's local government officials (Cabreza, 2012). According to Sinumlag (2012), the petition was filed based on the LGU's alleged violation of RA 9003's provisions, particularly the directive for LGUs to cease the operation of both open and controlled dumpsites within five years after the RA's effectivity. The petition also stated that the LGU had failed to properly manage its water resources, which is its responsibility as per the Clean Water Act, given how garbage leachate from the Irisan Facility had been found to pollute the water supplies of communities around and downstream from the site.

The petition for the Writ of Kalikasan and TEPO identified several actions to be taken by city government; namely (Sinumlag 2012):

- To protect, preserve, rehabilitate and restore the environmental and physical conditions of the Irisan dumpsite;
- To develop a comprehensive rehabilitation program for the communities affected by the slide;
- To remove the garbage from the dumpsite to prevent further pollution of water sources;
- To conduct a survey on the slide's impacts on health and the environment; and,
- To completely rehabilitate contaminated water sources.

The petitioners also moved that Baguio City officials designate a committee that would coordinate with the municipalities of Aringay and Tuba in implementing the rehabilitation program, the fulfillment of which would be monitored by an independent body composed of civic organizations, non-government organizations and residents (Sinumlag 2012).

The Supreme Court subsequently granted said Writ of Kalikasan, and city officials were vocal about their efforts to comply with the Supreme Court's order and emphasized the promptness of the assistance rendered to affected communities ("Baguio complies Supreme Court order" 2012). As will be discussed further in this paper, however, reactions on how efficiently the Baguio LGU has handled the trash slide and its aftermath have been mixed.

Apart from the furor over the filing and granting of the Writ of Kalikasan and TEPO, the trash slide was also significant because it brought about increased calls from the national government and concerned national government agencies for Baguio and also other LGUs to be more rigorous in the implementation of RA 9003 and other environmental regulations.

Under such scrutiny from different directions, the city government's waste management strategies prior to the slide were examined; as were its future solid waste management strategies.

Baguio's Solid Waste Management Pre-Trash Slide

According to an interview with the Solid Waste Division of the CEPMO, Baguio's solid waste management activities have been guided by the city's Ten-Year Ecological Solid Waste Management Plan (ESWMP) since its crafting and approval for the period 2007-2016.

The plan, which was adopted in March 2007 by then-acting City Mayor and CDC chair Reinaldo Bautista, Jr. is described as the LGU's "Response to the challenge of effectively and sustainably managing increasing solid waste while being consistent with the requirements of... RA 9003" (Baguio City 10-Year Ecological Solid Waste Management Plan 2007-2016, p. i). Additionally, the plan was supposed to take into consideration the policies described in the 2002-2008 CLUP and the city's Medium Term Development Plan.

The ESWMP (2007-2016) featured a vision of Baguio as a "zero waste society" and had the goals of substantially decreasing the health problems linked with poor SWM practices; preserving the city's natural resources; building effective multisectoral partnerships

to support the localization of ESWM policies and laws; utilizing environmentally-sound strategies and technologies to decrease the volume and toxicity of Baguio's solid waste; develop economic opportunities involving waste reduction and materials recovery; and, encourage the equal participation of men and women in ESWM.

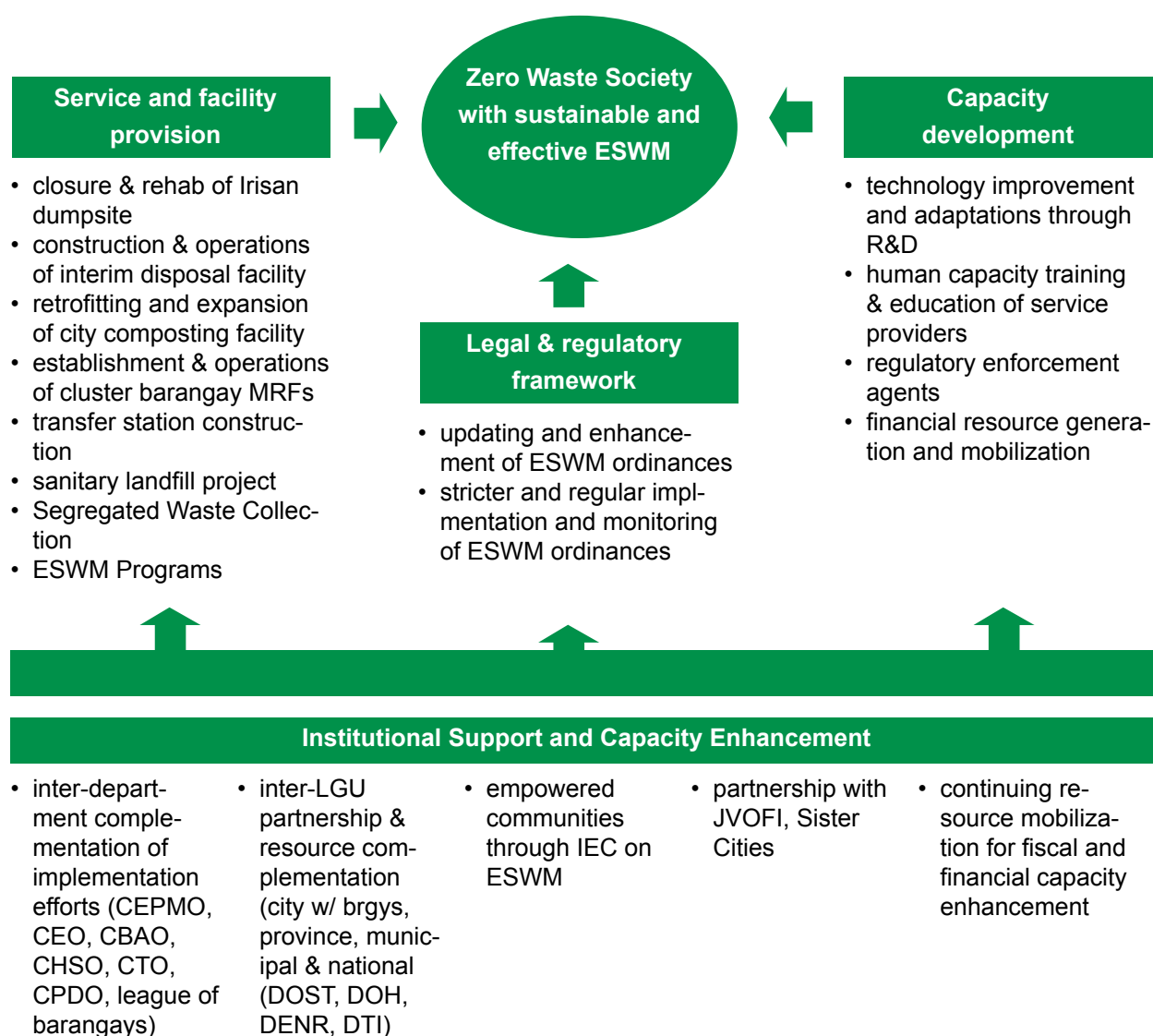
The ESWMP's stated objectives are the following:

- Protect public health and the environment;
- Establish guidelines and targets for the "avoidance" and reduction of the volume of solid waste through methods such as source reduction and waste minimization (e.g., composting, recycling re-use, green charcoal);
- Promote efficient segregation, collection, transport, storage, treatment, disposal of solid waste via the development and implementation of best environmental practices that are in line with existing laws;
- Encourage greater private participation in solid waste management activities; and,
- Reinforce the incorporation of ESWM into academic curricula (both formal and non-formal education) so as to increase environmental awareness and action among the residents of Baguio.

And its identified "objectives indicators" are:

- 100% waste segregation at source;
- 100% diversion of biodegradable wastes from the landfill;
- 100% recovery of recyclables;
- Decreased volume of special waste;
- Enhanced provision of ESWM services and improved ESWM facility;
- Sources of income and livelihood based on recovery and processing of waste;
- Enhanced cost recovery via collection of user fees.

To meet the stated objectives and work towards realizing the mission/vision of a "zero waste society with sustainable and effective ESWM," the plan focused on several areas, namely: "Service and Facility Provision" involving the closure and rehabilitation of the Irisan Open Dumpsite and providing sustainable waste disposal and collection alternatives; strengthening the city's "Legal and Regulatory Framework" for ESWM; "Capacity Development" for the city's human resources, technology, regulation, and budget generation/mobilization; and providing "Institutional Support and Capacity Enhancement" in support of activities in these focus areas (see Figure 3 for plan highlights).

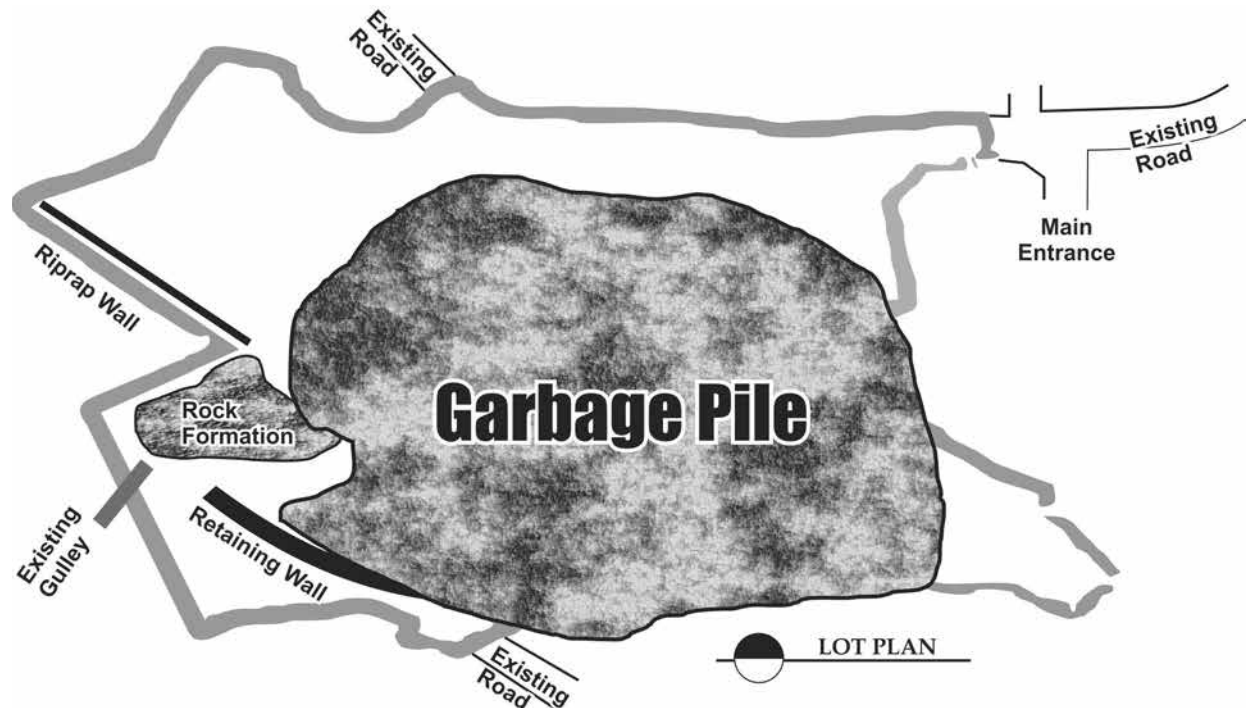
Figure 3. Strategic ESWM Plan Highlights.

Source: Baguio City 10-Year Ecological Solid Waste Management Plan (2007-2016).

Apart from the main ESWMP document, the city also had several ordinances and Policies relating to its Solid Waste Management Activities.

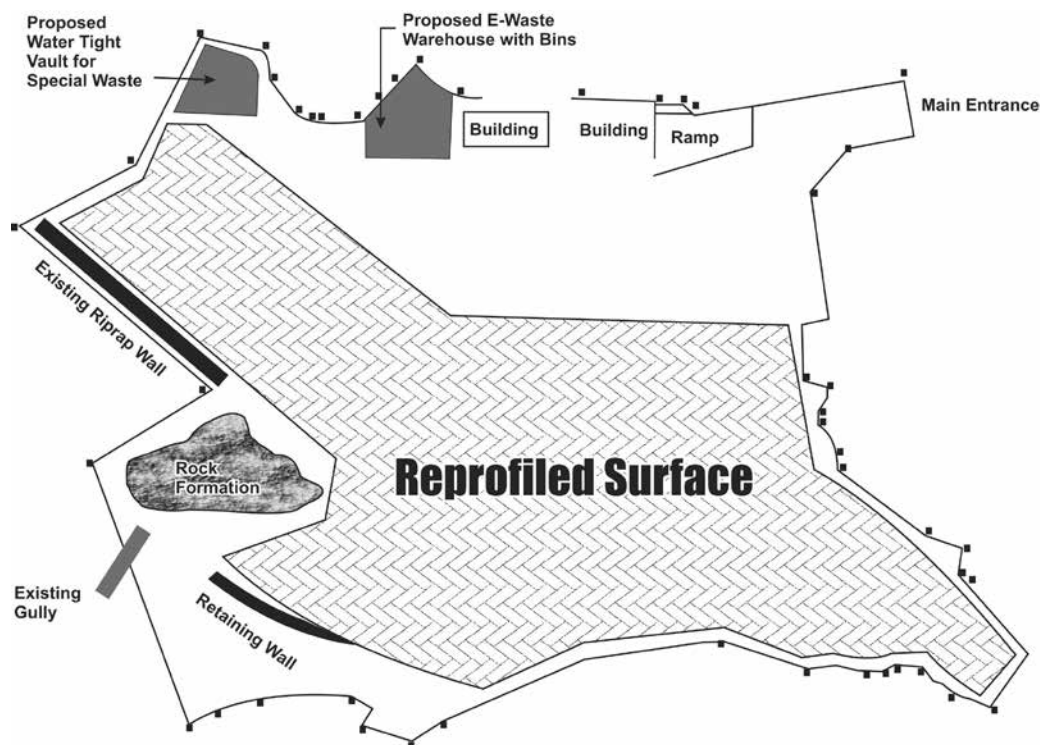
Also included in the ESWMP were designs for rehabilitation of the old dumpsite, which according to an editorial published in the online edition of the *Northern Dispatch Weekly* ("Baguio dump and the blame game" 2011), was developed more than 30 years ago even in the absence of meaningful consultations with both native and immigrant residents:

Figure 4. Diagram of Irian Dumpsite 2007.



Source: Baguio City 10-Year Ecological Solid Waste Management Plan (2007-2016).

Figure 5. Schematic Diagram of Proposed "Re-profiled" Irian Facility.



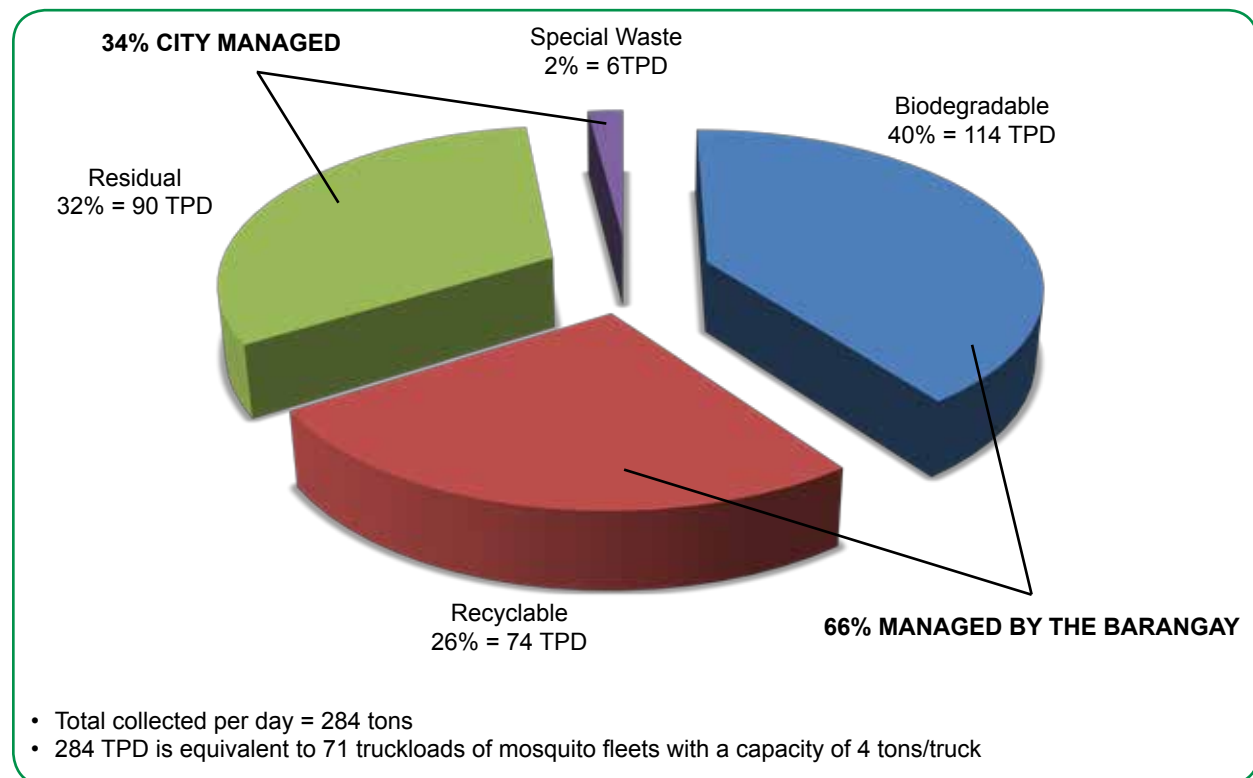
Source: Baguio City 10-Year Ecological Solid Waste Management Plan (2007-2016).

Additionally, and in line with the directives of RA 9003, the ESWMP already included plans for the ESL but did not identify a location for this facility, a fact that was also pointed out by a CEPMO Solid Waste Division Representative during a visit to their office.

Unfortunately, implementation of this plan has been anything but smooth and, In March 2007, a letter written by former City Councilor Galo Weygan described fears that “the mountain of waste overlooking the creek below within Asin Barangay is imminent danger of eroding or crushing down anytime when it is triggered by strong rain or water current” (Sinumlag 2012). And, in 2008, residents of Barangay Irisan and also of Tuba blockaded the access road to the dumpsite due to concerns that its capacity had already been exceeded (Cabreza 2012) and worries about its effects on public health and welfare (“Baguio dump and the blame game” 2011). Accordingly, CEPMO officials have stated that the open dumpsite has not been used as such since July 2008. Interviews with barangay officials in Barangay Irisan and also in Asin have indicated, however, that residents are unsure about whether or not the old dumpsite was ever really completely shut down.

The city’s waste management problems again came under close scrutiny in 2009, when 66 percent of the city’s waste (biodegradables such as kitchen and yard waste, and recyclables including glass and bottles) was supposed to be managed by the barangay, while the remaining 34 percent (residuals composed largely of plastic packaging, and special wastes including old electric bulbs, batteries and chemical containers used at home) was to be collected and managed by the city government (see Figure 6 below).

Figure 6. Characterization of Waste Collected by the City 2009.



Source: Lacsamana 2010.

During this time, piles of garbage could be seen accumulating in the streets of Baguio, with barangays having difficulty managing the biodegradables and recyclables. The reasons for this are myriad—locals felt that the barangay officials lacked the capacity to adequately handle disposal of the biodegradables. Recently, an interview with staff of the CEPMO Solid Waste Management Division also revealed that the system was problematic because many communities did not have any Materials Recovery Facility (MRF) or space for composting their biodegradables. The absence of MRFs in most barangays was the reason given at the Solid Waste Division for why the city government had never completely stopped collecting biodegradable waste. This is supported by data gathered in 2010, when the CEPMO described garbage collection as still “mixed.” This was attributed to a lack of support for segregated collection and a need for more intensive multisectoral Pro-segregation Information and Education Campaigns involving various sectors (Cleto 2011). At that time, waste collected by the city was first brought to what was referred to as the Transfer Station in Barangay Irisan before being hauled to the Sanitary Landfill in Capas, Tarlac (Baguio CEPMO 2009).

The sources of waste in Baguio City are presented in the table below:

Table 4. Sources of Waste in Baguio City.

Major Waste Source	Generation	In TPD	Collection
	Volume	Percent	Volume
Residential	138	43	122
Food Establishments	71	22	62
General Stores	32	10	28
Public Market	26	8	23
Service Center	23	7	20
Recreation Centers	19	6	17
Institutions	6	2	6
Industries	3	1	3
Special Waste generators	2	.62	2
Slaughterhouse	1	.35	1
TOTAL	321	100	284

Source: Lacsamana 2010.

The general elections in 2010 brought about a change in administration, and Mayor Mauricio Domogan’s administration had several new ideas on how the city’s waste management challenges could be addressed. The major solid waste management project that has so far been introduced during Mayor Domogan’s term involves the purchase and use of two Environmental Recycling System (ERS) machines that cost P64 Million (\$1.6M) each (Okubo 2012) and which, according to a staff of the CEPMO Solid Waste Division, is one of the “new technologies” that came in after the formulation of the 10-year ESWMP and so was not included in the city’s 3-year action plan. According to this same source, the arrival of new technology is the reason why some components of said 3-year action plan end up not being implemented.

The purchase of the ERS machines, which also involved an agreement between the city and the ERS provider ProTech wherein the latter would be in charge of collecting the solid waste from the city's barangays and hauling the residuals to ESLs in the lowlands, unfortunately, did not work out as planned. Beltran and Agreda (2011) write that due to poor community waste segregation ("lack of discipline among residents"), the ERS machines were only able to reduce the volume of garbage by a maximum of 15 percent while around 70 percent of the city's 166 tons/garbage generated per day were brought to the Irisan dumpsite. Additionally, although the ERS machines were also envisioned as a source of revenue for the LGU once the compost produced could be sold as fertilizer, the city has not yet managed to secure the necessary permits for this and so, according to a representative of the CEPMO Solid Waste Division interviewed for this study, the LGU has been giving out the fertilizer produced by the ERS units, which are now described as undergoing "preventive maintenance."

Overall, Baguio's waste management problems were daunting even before the trash slide. Studies were done on different approaches that could be taken to address these in combination with the city's technological solutions (e.g., the ERS) and efforts to conduct IECs among its citizens. One such study conducted by Cleto in 2010 was based on the observed need for multidisciplinary efforts/studies on the factors involved in local environmental behavior such as community waste disposal. Taking off from observations that several communities in Baguio City and the Municipality of La Trinidad exhibit exemplary solid waste management behavior even with the lack of strict enforcement by the local government, the study's findings highlighted the importance of including affective (as opposed to strictly cognitive) components in IECs (information and education campaign) designed to target environmental behavior such as waste management practices, and also indicated that structural interventions that encourage exposure to the outdoors particularly during childhood may support the development of an affective connection with the natural environment and, in turn, pro-environmental behavior including efficient waste management practices. Additionally, the study's findings supported the potential utility of innovative and multi-disciplinary planning techniques in trying to find context-based solutions to environmental issues such as waste management.

The findings of this paper were presented at a workshop in September 2010, in the presence of representatives from the academe, NGOs, civil society groups and local government. The CEPMO personnel present were pleased to note that their IEC efforts had apparently been working, based on the study's findings. Over a year however after the CEPMO was exposed to information on the need to consider alternative, localized approaches in combination with the technological and composting waste management efforts which have been running into problems both at the city (in terms of the ERS) and community (in terms of encouraging home- or community-based composting) levels, the LGU continued on a path that led Baguio's people to the tragedy of August 27, 2011.

Baguio's Solid Waste Management Post-Trash Slide

Nationwide Reactions to the Irisan Trash Slide

The Irisan trash slide was recognized as a calamity up until the national government level; although the assistance of P120 Million requested by the Baguio LGU from the National government was eventually downgraded to P80 Million (\$2M) (Agreda 2012 in "Irisan rehab slows down"; Refuerzo 2012 in "Sorting of city wastes").

As was discussed earlier, the effects of the slide reached beyond the city's borders, and not just in terms of the communities that actually experienced environmental impacts (such as polluted groundwater) from the trash slide: the Baguio trash slide came to be regarded as a "wake up call" for all LGUs

Reactions such as this indicate that, in general, the implementation of RA 9003 among LGUs is poor and it is not only the community of Baguio that is having a difficult time managing the outputs of its ecosystem. The intensity of the problem in Baguio, however, makes the city's situation evocative of a "dreaded future state": this was supported by an interview with solid waste management personnel of the Municipality of Trinidad who stated that the La Trinidad LGU is looking for ways to avoid reaching a garbage crisis situation such as the one witnessed in Baguio City.

Apart from the above, the Irisan trash slide caused a resurfacing of peoples' doubts on whether or not dumping had ever really ceased at the old dumpsite: Benguet Rep. Ronald Cosalan was quoted as saying that people residing near the old dumpsite "attest that it is still very much open" (Dumlao 2011), and it was reported by Catajan (2011) that the Benguet Provincial Board had instigated an investigation on the truth behind the Baguio LGU's claim that it had stopped dumping activities in Irisan (Catajan 2011).

Local Government Action

The Baguio LGU considered several courses of actions within a few days after the occurrence of the slide. These strategies were examined in terms of cost-effectiveness and included the following (Gonzaga and Cabreza 2011):

- Going ahead with the closure and restoration of the dump, which Councilor Peter Fianza said may cost the LGU more than P100M (\$2.5M);
- Removing the entire mountain of trash;
- Lighten the dumpsite's load by transferring garbage through the site's west end, so as to decrease the risk of another trash slide (based on what was described as an inter-agency evaluation by CEPMO head Ms. Cordelia Lacsamana).

Of course, the LGU had to clear the garbage blocking Asin Road. The cleared garbage was brought to the ESL in Urdaneta City and, at the time, it was considered that clearing the road plus hauling activities would cost more than P20M (Gonzaga and Cabreza 2011).

When asked about the LGU's accomplishments in connection with specific actions mentioned in the previously discussed petition for Writ of Kalikasan/TEPO, a representative of the CEPMO Solid Waste Division stated that, in terms of rehabilitating the dumpsite, the LGU is in the "fine-tuning" stage of designing the rehabilitation scheme.

This same resource person described this design stage as being “multidisciplinary,” involving the engineering departments of several academic institutions. According to him, the rehabilitation project, which also involves construction of a composting facility, has a P80M budget.

As for the removal of the garbage from the dumpsite in order to prevent further pollution of neighboring communities’ water sources, a representative from the CEPMO Solid Waste Division said that although there is still garbage in the old dumpsite, this has been flattened and covered with soil. Unfortunately, doubts about the efficacy of this technique remain—according to Mr. Abner Villanueva of the DENR, covering the accumulated solid waste at the old dumpsite will not only increase methane gas accumulation, but will also increase the weight of the garbage and bring about a corresponding increase in the risk of erosion once heavy rains hit the area (Galacgac 2012).

It may be remembered that those who filed for the Writ of Kalikasan/TEPO also called for a complete rehabilitation of contaminated water sources; however, the Solid Waste Division representative interviewed about the LGU’s efforts to rehabilitate water sources post-trash slide felt that this was a topic best discussed by someone from the CEPMO Liquid Waste Division.

As for the very important issue of relief and assistance given to the communities directly affected by the Irisan Slide, the Municipality of Tuba issued Resolution No. 125, where it identified issues relating to the trash slide that must be dealt with appropriately by Baguio City (Refuerzo 2011 “City Commits”). These were:

- Immediate clearing of the garbage that had escaped from the facility;
- Provision of health measures;
- Establishment of a water treatment facility;
- Provision of safe water pending the construction of said water facility;
- Complete halting of dumping activities at the Irisan facility;
- Reinforcement of the dumpsite’s wall;
- Erection of canals and screens beside the trash slide paths; and,
- Compensation for the people directly involved in clearing the areas affected by the slide.

Baguio Mayor Domogan and Congressman Bernardo Vergara have been adamant in their assertions that the LGU was steadfastly looking for ways to assist the affected residents of Tuba (Dumlao 2011), to the extent permitted by available resources (Refuerzo 2011 in “City Commits”).

By mid-October 2011, the Baguio LGU had conducted a dialogue with officials of the Municipality of Tuba, where Baguio Mayor Domogan had enumerated the specific actions taken by the city to address the enumerated concerns. Mayor Domogan however felt that Tuba’s officials were not being transparent regarding their true sentiments on Baguio’s efforts to assist those affected by the trash slide, saying “Our situation is difficult because when we talked during the dialogue, they appeared receptive and contented with what we were saying but then it turned out that they were not and they did not tell us directly,” (Refuerzo 2011 “City Commits”). Apart from the work to construct a water

tank and the delivery of clean water, Refuerzo (2011 in “City Commits”) writes that the LGU had also committed to hiring residents from Tuba to assist in the clearing activities.

Persistent Doubts, Conflicting Claims

Despite what the LGU says, however, there is confusion at the level of the affected communities as to which actions have actually been taken by Baguio City.

Additionally, there is still a significant amount of confusion over the actual state of the old dumpsite: as was revealed during an interview at the Barangay Hall of Irisan in March 2012, even barangay officials hesitate to outright support the city’s assertion that there is no more dumping occurring at the old dumpsite even now, nine months after that fateful slide. Still, it was reiterated by a Solid Waste Division representative that the old dumpsite is “totally closed” and that Purok 12 only houses a “temporary staging area” while they look for another site.

At present, the city still has no long-term solution for where to put its waste. According to an interview with a CEPMO Solid Waste Division representative, they are trying to identify an alternative site for the city’s future landfill. This source said that the city already has a “pre-design” of the ESL, but no barangay apart from Irisan is willing to host the facility, even if all the barangays want the garbage problem to be solved.

Solid Waste Policies, Programs, Projects and Budgeting: Moving on from the Irisan Trash Slide

The city’s 2012 Budget was significantly influenced by waste management considerations. Agreda and Engano (2012) write that approval of the CEPMO budget by the city had given said department the largest budget allocation (P142M) for 2012 (although this was a significantly lower figure than 2011’s P156M), with the largest chunk of this going to Solid Waste Management Activities—for example, P15M of the office’s P142M budget is to be set aside for the operation and maintenance of the ERS machines. Ms. Lacsamana stated that this amount did not yet include the cost of hiring additional employees for the ERS operations. The need for additional manpower was also cited by Solid Waste Division staff, who said that their division will request additional manpower so that they can maximize the two machines. At present, he said, they have eight workers focused on ERS operations and these workers have to work until 1 am.

According to Agreda and Engano (2012), CEPMO also has plans to procure generators for the ERS machines, which run on fuel and electricity.

One issue that came up during discussions on the expense of ERS operations was the limited revenue generated by said machines over their past eight months of operation, given that a major selling point of said machines was supposed to be their use in converting the city’s biodegradable waste into commercially saleable compost. According to interviewed solid waste management personnel, the city has not yet obtained a license to sell the compost produced by the ERS. Another source person who works in hauling Baguio’s residual waste to the Capas, Tarlac ESL said that the compost produced is not of good quality and there is no storage for this so the compost becomes useless once

it rains. Another significant piece of information obtained during the visit to the Solid Waste Division office is that the ERS machines are now “under preventive maintenance.”

Apparently, approval of the CEPMO’s 2012 budget also rested on the condition that CEPMO submit its program for the ERS, garbage hauling, IECs, and sewerage treatment plant (Agreda and Engano 2012). According to this same article, the CEPMO was asked to justify/explain its requested IEC budget of P3.406 Million, (the CEPMO apparently allocates at least P3M (\$75,000) for IECs per year.). Ms. Lacsamana responded that this would allow the city to “level up” its IEC strategy to include “interactive community-based campaigns” with trainings for the city’s residents. Based on the article, it appears as though most of the IEC budget will be linked to proper waste disposal as to avoid pollution of the city’s waterways.

Apart from the allocation for IECs on waste management and the budget for maintenance and operations of the ERS machines, a share of the CEPMO budget would also go towards (Agreda and Engano 2012):

- **Monitoring the city’s waterways and continuing its water resource management “Water Dialogues” program with residents of each barangay.** In response to this, Councilor Tabanda suggested that the CEPMO, together with the DENR, should institutionalize clean-up drives in addition to establishing sampling points;
- **Conducting climate change adaptations IECs in the barangays (allocated a budget of P75,000),** to which it was suggested by Councilor Peter Fianza that it might be more useful for CEPMO to first instigate a city-wide campaign to increase LGU officials’ climate change knowledge; and,
- **CEPMO’s Developmental Budget** (allocated P1.5M or \$37,500), which will be utilized for rehabilitation of fences in the Baguio Cemetery and development of other public spaces

At present, the city’s expenses for hauling its solid waste to ESLs in the lowlands are reported to have reached P160 Million (\$4M) (Palangchao 2012 in “folks irked”).

In terms of budget, the city’s financial documents state that, in 2011, the following amounts had been dedicated to solid waste management activities; particularly in connection with Disaster Risk Reduction and Management (DRRM) due to the Irisan Slide:

Table 5. Baguio City DRRM budget 2011.

Proj. ID	Date	ObR No.	ObR Particulars/Project Name	Activity	Total ObR	961	962	969
				Appropriations	47,055,000.00			47,055,000.00
				Allotment	47,055,000.00			47,055,000.00
				Appropriation Balance				
				Allotment Balance	2,954,995.57			2,954,995.57
				Total Obligations	44,100,004.43			44,100,004.43
Proj. ID	Date	ObR No.	ObR Particulars/Project Name	Activity	Total ObR	961	962	969
	05/25/11	1	I. Queñano-quick response fund	DRRM	500,000.00			500,000.00
	06/07/11	2	PR No. 87 - (100) NFA rice	DRRM	125,000.00			125,000.00
	06/07/11	3	PR No. 85 - (100) sardines, noodles, coffee	DRRM	401,500.00			401,500.00
	06/08/11	4	PR No. 81 - blankets, mats, pillows, etc.	DRRM	244,500.00			244,500.00
	09/05/11	5	PR No. 188 - various supplies	DRRM	203,500			203,500.00
	09/06/11	6	PR No. 190 - tipping fee	DRRM	507,955.00			507,955.00
	09/06/11	7	PR No. 189 - garbage hauling	DRRM	499,500.00			499,500.00
	09/06/11	8	PR No. 192 - tipping fee	DRRM	11,823,320.00			11,823,320.00
	09/06/11	9	PR No. 191 - garbage hauling	DRRM	1,975,050.00			1,975,050.00
	09/07/11		Adj OBR 09	DRRM	17,775,450.00			17,775,450.00
	09/07/11		Adj OBR 03 (PR No. 85)	DRRM	(55,435.00)			(55,435.00)
	09/09/11	10	Payroll - OT - Typhoon Mina	DRRM	54,864.99			54,864.99
	09/14/11		Adj OBR 10	DRRM	4,243.67			4,243.67
	09/14/11	11	PR No. 260 - assorted groceries, etc.	DRRM	45,185.55			45,185.55
	09/15/11	12	N. Pascua - OT - Typhoon Mina	DRRM	3,453.12			3,453.12
	09/15/11		Adj to OBR # 10	DRRM	12.94			12.94
	09/20/11	13	PR No. 274 - diesel/gasoline	DRRM	9,966.25			9,966.25
	09/21/11		Adj OBR 13	DRRM	11,628.76			11,628.76
	09/23/11	14	PR No. 278 - (500) sacks	DRRM	5,000.00			5,000.00
	09/27/11		Adj OBR # 11	DRRM	(1,516.00)			(1,516.00)
	09/28/11	15	PR No. 202 - Rehabilitation of eroded riprap, bridge and canal at Km. 5 Asin Rd.	DRRM	4,239,399.48			4,239,399.48

09/28/11	16	PR No. 201 - Rehabilitation of drainage canal from Irisan dumpsite retaining wall down to Km. 5, Asin Rd.	DRRM	5,737,291.66			5,737,291.66
10/03/11	17	B. Fangasan - reimbursement - Typhoon "Pedring"	DRRM	5,785.89			5,785.89
10/05/11		Adj OBR 10	DRRM	110.39			110.39
10/12/11	18	N. Pascua - OT - Sept. 1, 3, 4	DRRM	1,361.88			1,361.88
10/13/11	19	Payroll - OT - Quiel	DRRM	20,828.38			20,828.38
10/18/11		Adj to OBR # 19	DRRM	(781.40)			(781.40)
10/24/11		Cancellatin of OBR 19	DRRM	(20,046.98)			(20,046.98)
10/25/11	20	PR No. 318 - gasoline - Typhoon Pedring	DRRM	11,775.85			11,775.85
11/02/11		Adj OBR 5	DRRM	(28,900.00)			(28,900.00)

Source: "Financial Statements" n.d.

An interview with one of the individuals directly involved with the clearing activities in Irisan, however, said that there were issues in prompt payment for their hauling services and the city ended up paying their company by giving them trucks purchases from Subic. This same source says that the trucks are not heavy duty enough to really handle the waste they have to haul to lowland ESLs.

Overall expenditure amounts of the CEPMO in 2010, estimates for 2011, and proposed budget for 2012 can be viewed below:

Table 6. CEPMO Expenditures (2010-2011) and Proposed Budget for 2012.

Local Budget Preparation Form No 3				
PROGRAMMED APROPRIATION AND OBLIGATION BY OBJECT OF EXPENDITURE				
Office/Department: Environments and Parks				
Object of Expenditure	Account Code	PastYearActual2011	CurrentYear-Estimate2011	BudgetYear-Proposed2012
10 Current Operating Expenditure				
11 Personal Services		72,483,137.93	72,068.00	72,757,000.00
Salaries and Wages - Regular	701	33,610,804.88	43,663.00	47,415,000.00
Personnel Economic Relief Allowance (PERA)	711	6,972,097.87	7,920.00	7,920,000.00
Representation Allowance (RA)	713	144,000.00	144,000.00	144,000.00
Transportation Allowance (TA)	714	144,000.00	144,000.00	144,000.00
Clothing/Uniform Allowance	715	1,180,000.00	1,320.00	1,320,000.00
Productivity Incentive Allowance	717	576,000.00	660,000.00	660,000.00
Honoraria	720	7,938.00		
Hazard Pay	721	1,146,700.00	1,296,000.00	1,307,000.00
Overtime and Night Pay	723	1,878,499.09	4,600,000.00	
Cash Gift	724	1,455,000.00	1,650,000.00	1,650,000.00
Year End Bonus	725	2,818,427.00	3,639,000.00	3,952,000.00
Life and Retirement Insurance Contributions	731	4,025,111.36	5,240,000.00	5,690,000.00
PAG-IBIG Contributions	732	349,354.11	396,000.00	396,000.00
PHILHEALTH Contributions	733	398,200.00	517,000.00	564,000.00
ECC Contributions	734	311,630.48	379,000.00	395,000.00
Retirement Benefits - Civilian	740	958,814.11		
Terminal Leave Benefits	742	719,015.46	500,000.00	1,200,000.00
Health Worker Benefits	743	3,241.80		
Other Personnel Benefits	749	15,784,303.76		
12 Maintenance and Other Operating Expenses		37,681,021.40	48,936,635.00	57,908,000.00
Travelling Expenses	751	1,040,042.37	3,124,000.00	1,500,000.00

Training Expenses	753	111,166.63	638,500.00	300,000.00
Office Supplies Expenses	755	279,042.16	2,030,240.00	2,000,000.00
Drugs and Medicines Expenses	759		50,000.00	75,000.00
Medical, Dental and Laboratory Supplies Expenses	760	360.00	50,000.00	200,000.00
Gasoline, Oil and Lubricants Expenses	761	10,747,974.16	8,312,000.00	21,000,000.00
Agricultural Supplies Expenses	762	44,595.00	3,700,000.00	2,500,000.00
Other Supplies Expenses	765	864,556.36	1,023,000.00	4,600,000.00
Water Expenses	766	555,041.80	1,000,000.00	1,000,000.00
Electricity Expenses	767	4,100,255.29	5,000,000.00	8,500,000.00
Postage and Deliveries	771		12,000.00	
Telephone Expenses - Landline	772	56,350.86	130,000.00	70,000.00
Telephone Expenses - Mobile	773	30,000.00	216,000.00	160,000.00
Printing and Binding Expenses	781	3,169.00	54,200,000.00	50,000.00
Transportation and Delivery Expenses	784	17,005,866.00		
Subscription Expenses	786	8,414.00	15,000.00	10,000.00
Survey Expenses	787		380,000.00	450,000.00
Environment/Sanitary Services	794		5,400,000.00	1,750,000.00
RM - Office Buildings	811	479.00	375,000.00	300,000.00
RM - Other Structures	815	650.00	100,000.00	250,000.00
RM - Office Equipment	821	11,800.00		
RM - IT Equipment and Software	823			15,000.00
RM - Machineries	826		1,000,000.00	1,500,000.00
RM - Construction and Heavy Equipment	830	168,901.32	1,000,000.00	1,500,000.00
RM - Other Machineries and Equipment	840	3,905.00	50,000.00	100,000.00
RM - Motor Vehicles	841	746,279.00	3,768,000.00	2,300,000.00
RM - Parks, Plazas and Monuments	852	30,000.00	1,500,000.00	1,500,000.00
Fidelity Bond Premiums	892	1,125.00	1,000.00	1,000.00
Insurance Expenses	893	414,663.60	1,000,000.00	165,000.00
Other Maintenance and Operating Expenses	969	1,052,384.85	9,034,695.00	6,112,000.00
20 Capital Outlay			65,940,365.00	11,942,000.00
Land	201			2,000,000.00
Office Equipment	221			129,000.00
Furniture and Fixtures	222			277,000.00
IT Equipment and Software	223		70,365.00	671,000.00
Communication Equipment	229		20,000.00	187,000.00

Firefighting Equipment and Accessories	231			158,000.00
Medical, Dental and Laboratory Equipment	233			2,000,000.00
Other Machineries and Equipment	240		65,850,000.00	3,500,000.00
Parks, Plazas and Monuments	252			3,000,000.00
Other Assets	290			20,000.00
Total Appropriations		110,164,159.33	186,972,000.00	142,607,000.00
Prepared by:				
CORDELIA C. LACSAMANA		Approved by:		
Department/Office Head		MAURICIO G. DOMOGAN		
		City Mayor		
Reviewed by:				
LETICIA O. CLEMENTE				
City Budget Officer				

Source: "Financial Statements" n.d.

Overall, the major upcoming expenses for Solid Waste Management appear to be for infrastructure works at the old Irisan dumpsite. According to a source at the Solid Waste Division, the approved budget for rehabilitation works is P80M (\$2M), and the funds will come from the national government. Five million pesos will also be spent for "extending the shed" of the composting facility. According to this source, the SW Division budget for 2012 has already been approved and, as of April 2012, they were only waiting for their MOEE budget to be given.

Other Programs and Projects

Although interviewed personnel at the Solid Waste Division said that they have generally stuck to the programs and projects in the existing ESWMP, after the slide, city officials did mention several possible methods of adding teeth to the city's Solid Waste Management rules and regulations, and have also pushed for the implementation of City Ordinance 26, which bans stalls in the public market, as well as establishments in Baguio's commercial zone from utilizing plastic containers for groceries and all dry goods (Dacawi 2012 in "Ordinance Banning"). According to Dacawi (2012 in "Ordinance Banning"), Ordinance 26 was actually passed in June 2007 after the Council remarked that they only way to establish an effective waste management program is for studies to be one on the different sources of waste and then to control and regulate waste generation.

Said ordinance directs shoppers to bring their own biodegradable or other sturdy and reusable shopping bag or container except for "plastic sando bags." Additionally, establishments that are found to be giving out plastic bags will be fined P1,000 for the first offense, P2,500 for the second offense, and P5,000 plus a 3-month suspension of business

permit for the third offense, with a possibility of non-renewal of business permits for habitual offenders (Dacawi 2012 in “Ordinance Banning”).

In terms of trying to increase rates of segregation at the community level, the mayor directed barangay officials to return unsegregated waste to their owners (Refuerzo 2012 in “Sorting of city wastes”). When asked about the implementation of this, a representative of the Solid Waste Division only said that at the city level, they generally practice “No segregation, no collection” and they still sometimes see unsegregated waste and so leave this uncollected. Still, there are times that unsegregated waste gets through and also, in a major loophole of the system, biodegradables brought to the ERS are also wrapped in plastics, and the ERS workers also still have to separate small nonbiodegradable materials such as bottlecaps, etc.

Apparently, though, rates of segregation were already up to 70 percent in 2011, from just 50 percent segregated waste in 2010 (Agreda and Engano 2012), a feat that CEPMO head Cordelia Lacsamana said could only have been achieved through the cooperation of the different barangays. Ms. Lacsamana added that they hope to see a 90 percent rate of segregation by the end of 2012—it is unclear though, how they plan to further increase the rate of segregation, given that a representative of the SW Division said that there are no new programs/projects apart from those already contained in the existing ESWMP. Technological solutions such as the ERS which, based on the interview, are the only “digressions” from said plan, will not help in increasing the rate of segregation and other community- and household-based waste management practices. This aside, Ms. Lacsamana expressed the hope that perfecting the LGU’s waste segregation system would allow the city to stop using the lime kiln in Barangay Irisan as a transfer and recycling station for its garbage (Agreda and Engano 2012).

According to recent news articles, however, said lime kiln is also now the subject of complaints from residents, which increases the pressure on city officials to find a sustainable way to manage its waste. A recent article by Palanchao (2012 in “City hopeful landfill”) cites residents’ concerns that the “temporary staging and transfer area” is an environment and health hazard. The headline of the May 6, 2012 edition of the *Baguio Midland Courier* also highlighted locals’ concerns about the foul odor generated by the untreated waste at the lime kiln where, as mentioned earlier, most of Baguio’s waste is temporarily stored due to the low storage capacity of the city’s other MRFs (Palangchao 2012 in “Folks irked”). Palangchao (2012 in “City hopeful landfill”) writes that these complaints resulted in delays in the collection of “tons of garbage” from different barangays.

The fact that locals immediately brought this to the attention of local government can actually be viewed as one of the positive, if it may be termed this, impacts, of the Irisan slide since locals in Irisan and Asin mentioned that they had been living with foul odors and, in the rainy season, hair and other foreign materials in their water supply, and various negative effects of the ill-management of the Irisan Dumpsite for many years but most of them had not made an issue about this since it is just something they learn to live with.

Alongside the problems with the lime kiln are recent marked failures in the city’s garbage collectors to meet the scheduled pick-ups. So, recently, bags of trash have once

again been observed gathering in the different pick-up points around the city. An article written by the articles of *Northern Dispatch* in May 2012 described how the piles of garbage have again been building up in Baguio ("Editorial: Garbage again?" 2012) and stated that these waste problems will never end while city officials focus on short-term and expensive solutions.

One major Solid Waste Management project on the horizon is the updating of the 10-year ESWMP. One of the 72 Ordinances passed by the City Council in the year 2011, most of which are described as supporting measures to preserve the environment, is a Resolution for the City Solid Waste Management Board to conduct a review of the existing ESWMP (Refuerzo 2012 in "Council Approves"). Refuerzo (2012 in "Council Approves") writes that several other resolutions involve measures to address the city's waste management issues, quoting Vice-Mayor Daniel Fariñas as stated that "the official position of the August Body relative to solid waste management is clear and unambiguous, compliance with the provisions of Republic Act 9003 otherwise known as the Solid Waste Management Act must be a top priority albeit taking into consideration the unique and prevailing situation and circumstances relative to the Irisan controlled dumpsite facility and the ensuing consequences thereto."

True enough, during an interview with a representative of the CEPMO SW Division, it was revealed that the division had requested a budget of P900,000 for updating of the plan, but they had been told that they could accomplish this task with P100,000. The interviewee expressed concern about this, since he was of the view that the current staff at the division do not have all the necessary skills for plan updating and so they might have to tap consultants for validation of data, formulation of new programs and projects, etc. When asked if the division does not send their staff for training or capacity-building so that they will be able to perform all their functions without hiring consultants, a source said that their capacity-building activities mostly have to do with "operations" and not so much with writing and planning.

Interviewed staff of the Solid Waste Division also brought up how the existing ESWMP already included designs for the ESL but no proposed location for this. The new plan, he said, would definitely involve the ESL although the major issue will still be the siting. This interviewed staff member also pointed out that they had been advising the city as early as 1996 about the need to identify other areas/open spaces that can be used for the future waste management needs of the city. Unfortunately, city officials had not heeded their advice and now most of the open spaces have already been occupied by informal settlers. A review of the 2002-2008 Baguio Comprehensive Land Use Plan describes plans to convert the Irisan Dumpsite into "an Ecological Park following the provisions of RA 9003" but in connection with future space for an ESL only states that "the identification of land suitable for a sanitary landfill will still be pursued for residual waste."

The Continuing Search for an ESL Site

Among the sites considered for an ESL that will meet the needs of Baguio City was one in Barangay Ampucao, Itogon. Catajan (2012 in "Mayor Puts on Hold") writes that this proposed site is backed by Korean investors and would cover 21-hectares at Sitio

Tapak in Ampucao and would serve the solid waste disposal needs of other towns in Benguet Province. Plans for the Ampucao Site went further than those for other potential sites and Catajan (2012 in “Mayor Puts on Hold”) adds that a Memorandum of Understanding (MOU) on this was even signed by Baguio Mayor Domogan and Benguet Governor Nestor Fongwan in March 2011. Unfortunately, the proposed site in Ampucao did not obtain the approval Itogon Mayor Oscar Camantiles who stated that, according to law, an ESL should be a project of the local government – and not the barangay – within whose jurisdiction the ESL is to be established (Catajan 2012 in “Mayor Puts on Hold”). Given this, Mayor Camantiles plans to go ahead with implementing their municipality’s Ecological Solid Waste Management Plan, which identifies an open pit mining area in Luneta, Loacan as a site for their ESL. An article by Palangchao (2012 in “City hopeful landfill”) revealed that the proposed Ampucao ESL is budgeted at US\$42 Million, and that a major issue surrounding the approval of the Project is the need to obtain concerned indigenous communities’ free, prior, and informed consent (FPIC). This same article quotes Ampucao’s barangay captain as saying that they (barangay officials) will assist relevant agencies in carrying out public hearings and obtaining the FPIC.

Despite these difficulties, the city government appears hopeful that the proposed Ampucao ESL may still push through. According to a recent article by Palangchao (2012 in “City hopeful landfill”), city officials are soon meeting with Benguet officials after Mayor Camantiles himself approached Mayor Domogan to tell the latter about Itogon’s willingness to assist in solving Baguio’s solid waste problem.

Also considered as potential sites for the ESL are a 25-hectare area in Sablan Benguet (Agreda 2012 in “Search for Baguio Sanitary”), and lots in Barangays Sto. Tomas, Camp 7, and Bakakeng in Baguio City (Domondon, 2012).

There is also a 3-hectare site in Sitio Bilis, Bakakeng Central that, according to an article by Domondon (2012) has been described by city officials as “feasible and accessible for immediate development and use” to meet Baguio’s waste management needs. Given this, Councilor Cosalan is said to have filed a proposed ordinance that will allow the immediate release of P1 Million for conducting a feasibility study at the potential ESL sites in Barangays Sto. Tomas, Camp 7 and Bakakeng. According to Domondon (2012), this proposed ordinance is based on the existing City Ordinance 59, series of 2009 that authorized surveying “an identified multi-land use area of more than one thousand three hundred square meters” in the previously mentioned barangays.

Baguio Mayor Domogan has also reportedly received information about a potential disposal site in La Trinidad that may be completed in two months and will be able to accommodate Baguio City’s residual wastes for a period of six months to one year Palangchao (2012 in “City hopeful landfill”).

Solid Waste Management and the Community

City-level initiatives and local Communities

The scrutiny brought about by the Irisan slide revealed multiple weaknesses in Baguio’s waste management strategies, including the level of community participation. Short-

ly after the tragedy, Beltran and Agreda (2011, in “Government agencies probe”) wrote about calls for increased participation of communities that host dumpsites, particularly in connection with carrying out safety compliance checks.

At that time, city officials also called for barangay officials and residents to be more industrious in complying with the city’s waste segregation policies (Refuerzo 2011 in “Barangays urged to level up”), especially given the view that one of the reasons the ERS machines had failed to significantly reduce the city’s garbage volume was the “lack of discipline among residents [which] resulted in segregation failure” (Beltran and Agreda 2011 in “Government agencies probe”).

In terms of city officials listening to what local communities have to say about the crisis, the local government did express its openness to listening to the public’s suggestions on how the LGU might solve its waste management problems post-slide. Political maneuvering by several parties, however, was identified as a roadblock to cooperation between the LGU and the affected families (Cabreza 2011 in “Baguio Laments”). Also, it appears as though city officials have not been united in their openness to receiving suggestions from the community.

For example, Refuerzo’s article (2011 in “Barangays urged to level up”) stated that city officials are encouraging barangay officials to initiate efforts to adapt garbage collection to the specific conditions of their barangay. This same article quoted CEPMO head Cordelia Lacsamana as saying that “If the system is not applicable or not working in their barangays, then they can coordinate with us so we can make the necessary adjustments.” According to Refuerzo (2011 in “Barangays urged to level up”), Ms. Lacsamana expressed her appreciation for the efforts of the *punong barangays* (village heads or barangay captains) in Campo Filipino and Lower Magsaysay in personally coordinating with the CEPMO to adjust the collection system. She had also expressed her hope that other barangays would follow suit.

But this appreciation for the opinions of the community members is apparently not universally held by CEPMO staff or equally applied to all communities. During an interview conducted for this study, a representative of the CEPMO Solid Waste Division commented that they hadn’t asked residents of Irisan for suggestions on how to handle the crisis since said locals lack the knowledge and also actually still want the city’s dumpsite to stay in Barangay Irisan, due to this being a source of income for them.

This apparently low opinion of local communities as sources of knowledge is regrettable and seems to be unfounded, given that these are the people who live side by side with the city’s solid waste and so have directly witnessed and been affected by the city’s waste management issues:

As Sinumlag (2011) reported, those who petitioned the Supreme Court for the Writ of Kalikasan and TEPO vs. Baguio had noted the presence of cracks along the retaining wall and a bulging of the wall’s mid-portion a few days before the slide. The same article describes these signs as indications that the “backfilled” garbage had “exceeded the staked-out height limit” and that the wall about to give way.

That the people who bore witness to this are not regarded as potential sources of useful knowledge is another indication of the LGU’s technocrat-driven planning process

and its lack of inclusiveness. In this time where weather extremes are projected to become more likely and given the increasing importance being given to DRRM, the LGU needs to find a way to enable its citizens (especially those who are usually marginalized in the current set-up of development planning and environmental management) to provide feedback in a timely and meaningful (i.e., their opinions are actually considered) manner.

Additionally, because the Irisan facility has served as a source of livelihood for the community, many of the people living around the dumpsite have first hand experience working with and transporting the city's waste.

Indeed, one such person interviewed for this study works with one of the trucking companies tapped under the city's arrangement with ProTech to haul the city's waste to Sanitary Landfills in the lowlands. This resource person revealed that, prior to the Irisan trash slide and despite the existing "no segregation, no collection" policy, mixed dumping was still practiced. He recounts their embarrassment when delivering waste to the Capas ESL, where people would throw things at the dump trucks from Baguio City. He supports the Solid Waste Division's statement that the communities affected by the slide were not asked about their ideas on how the situation can be improved. When asked why the people did not speak up on their own initiative, this resource person says that most of those directly affected are considered squatters by the local government and so they are afraid to voice their concerns because they might be told to leave.

Based on his experiences working with Baguio City's waste and his observation that segregation rates have improved now that "tanods" guard segregation in the barangays, this interviewee also had his own suggestions on how the city can better handle its garbage problems. He mentioned viewing a feature on an exemplary community-based waste management strategy spearheaded by a barangay captain in Manila, where households segregate their waste into given categories with a corresponding number of "points" based on the volume/number and particular type of waste collected. The households can then "exchange" accumulated points for items such as soap, etc. These redeemable items are funded from the sale of collected plastics and cans.

This resource person is of the opinion that a similar system can be implemented in barangays here, and might be particularly effective at the *purok* or sub-village level, which he describes as the "smallest community cluster," although one potential difficulty might involve transporting the waste from the household to the barangay hall or center, given the local terrain. Overall, he said, the city's waste management can be improved by basing this around waste management at the *purok* level. He also mentioned the lack of political will in implementing existing strategies and said that people can also make personal efforts to minimize their use and subsequent disposal of non-biodegradable materials.

This resource person was knowledgeable and openly expressed his opinions/suggestions on how the waste problems of the city might be solved once he saw that he would actually be listened to. This makes the city's dismissal of the community as potential source of knowledge seem unfounded. Even if the locals' suggestions are not eventually found to be the most appropriate solution for the city, there can be no harm in considering and giving value to the people's ideas and sentiments, and showing them that their voices are really being heard.

Liquid Waste

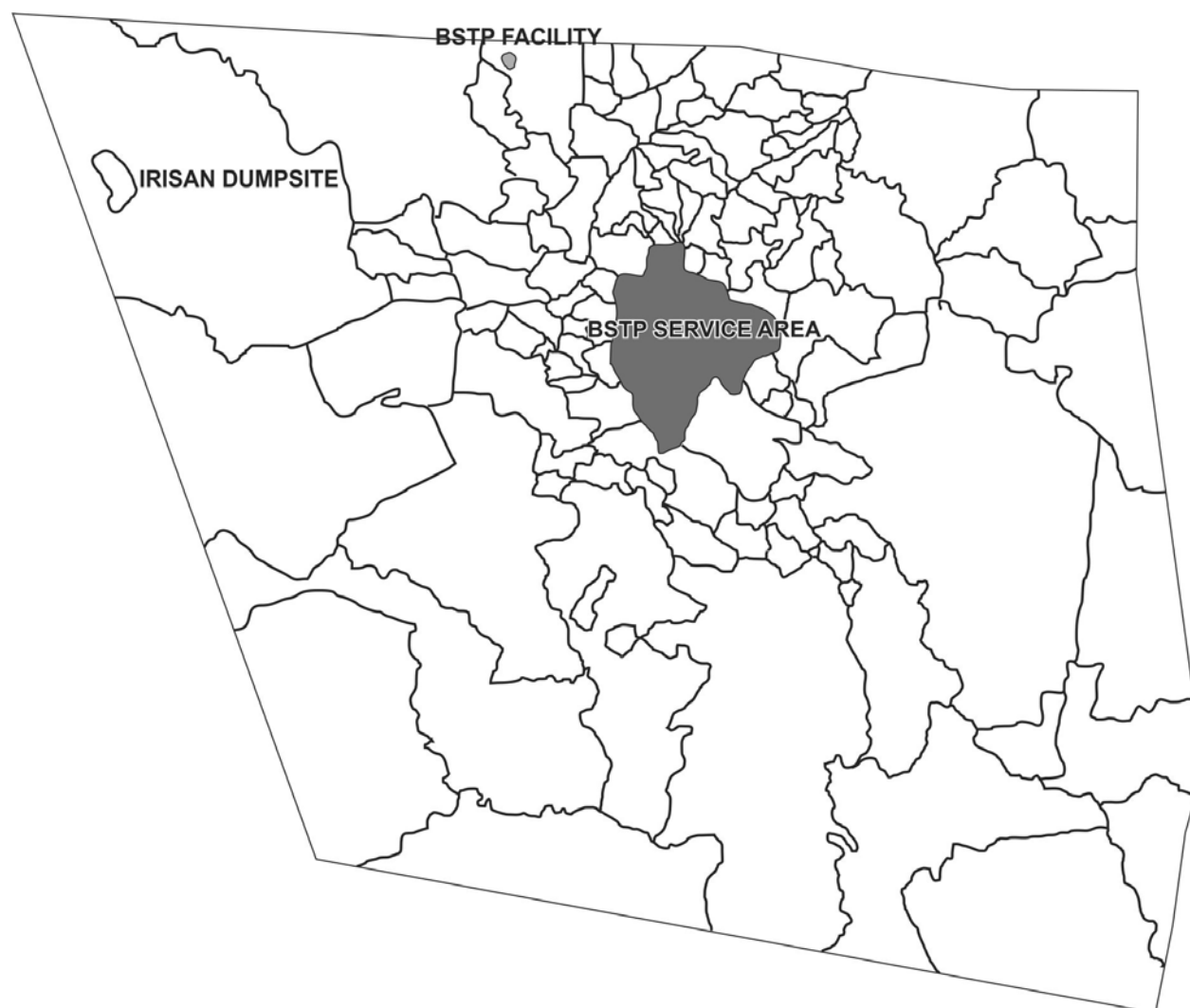
A community's liquid waste concerns revolve around the management of the wastewater generated from the different land uses and activities located within its territory. One report on Integrated Liquid Waste and Resource Management (2010) states that liquid waste also covers rainwater runoff that may be "contaminated by washing and collecting pollutants from streets, lawns and gardens – most of this runoff enters creeks, rivers and the ocean untreated" (p. 9).

At present, Baguio City's liquid waste management activities center on the Baguio Sewage Treatment Plant (BSTP) which, according to Cabreza (2011 in "Schools Unite"), was constructed in the early 1990's through a Japanese grant. As of 2010, the BSTP's operations of which involved 2,000 manholes and 53 kilometers of sewer lines and covered 66 barangays within the Central Business District (Figure 7).

According to the CEPMO (as cited in Cleto 2011), the BSTP's operational costs are approximately P14M, although the fees collected only amount to P4M. Additionally, according to Refuerzo (2011), the BSTP functions 40 percent past its rated capacity (operations are at 9,600 cu.m./day, while rated capacity is at 8,5000 cu.m./day). It is thus a bit of a surprise that the Municipality of La Trinidad also utilizes Baguio City's STP for part of its liquid waste treatment. According to interviews, this is because La Trinidad has no STP of its own.

To tackle the problem of the BSTP operating beyond its capacity, and also as part of its water resource management strategies (to be discussed further below), the city is conducting a comprehensive survey of sewer connections and alternative wastewater disposal practices. The results of this survey are meant to serve as basis for a proposal to expand the BSTP (CEPMO 2010, as cited in Cleto 2010).

This mapping project is in line with a city Council member's call, in 2011, for the CEPMO to conduct an "asset inspection" of the LGU's sewer and drainage facilities ("Philippine Official" 2011). According to one online article, Baguio City Councilor Isabelo Cosalan, Jr. proposed the conduct of a survey to collect data on the "capacity, structural soundness and appropriateness of [the LGU's sewer and drainage facilities] to service buildings and people." Councilor Cosalan had observed that the city's liquid waste generation had been growing due to increases in population and hardscaping, which increases the volume of run-off water that may overwhelm the city's drainage system. He added that Baguio's topography and the location of settlements makes it impossible for the BSTP's operations to cover the city's entire political jurisdiction; thus, many households rely on private septic tanks or, in some cases, direct discharge into waterways for the disposal of their liquid waste.

Figure 7. Coverage of Baguio Sewage Treatment Plant Operations.

Source: CEPMO 2010.

Aside from the BSTP, several facilities in the city do have their own liquid waste treatment facilities (Cleto 2011). One such facility is the Philippine Economic Zone Authority (PEZA), although residents still identify the PEZA facility as one of the primary sources of pollution in their barangay creek, which they now describe as “foul-smelling” and “full of algae” with pollution that flows down to the lowlands.

The above situations highlight the close links between Baguio City’s liquid waste management activities and the management of its water resources. Several waterways pass through Metro Baguio and several major watersheds are also located within its political jurisdiction. According to the 2002-2008 CLUP, these waterways serve as the natural drainage of the city. Pollutants in these waterways flow downwards to lower-lying areas and, akin to the Baguio City’s solid waste management problems, clearly demonstrate how the state of the environment of Baguio City is closely linked to the state of the environment in neighboring areas.

Water Resource Management in the city also shows us how “separate” environmental issues, or environmental issues that are usually considered and dealt with separately, are actually interlinked: water pollution is affected not just by liquid waste management activities but also by solid waste management activities. In Baguio City and the Municipality of La Trinidad, Solid and Liquid Waste are handled by separate offices and, based on interviews conducted for the present study, these separate offices are generally not acquainted with each others’ activities. Still, the need to coordinate liquid and solid and waste activities is sometimes also recognized—for example, it was suggested that the purchase of a smaller ERS machine could also “reinforce” the BSTP’s operations by purifying sewage water that would otherwise contaminate the Balili River, and also by facilitating the BSTP’s “de-sludging” activities (Refuerzo 2011). According to Refuerzo (2011), the purchase of such a machine—budgeted at P24M—had already been included in the city’s approved budget for 2011.

Additionally, several items in the approved CEPMO budget for the year 2012 involve a “cross-over” between the usually separate solid and liquid waste management initiatives. For example, part of the budget for IECs will go towards raising public awareness about proper solid waste management disposal, so as to avoid the pollution of waterways such as the Balili River (Agreda and Engano 2012), which an interviewed representative of the Solid Waste Division had said their office was not involved in.

At present, the most publicized and perhaps most comprehensive (in terms of sectoral participation) liquid waste/water resource management project currently being implemented in Baguio City, as well as the Municipality of La Trinidad is the Balili River System Revitalization Coalition (BRSRC) project. According to Bautista, Dumlao, Sinalo, and Geslani (2012), revitalization activities under the project are expected to span the next three years, and participating sectors include the local governments of the Municipality of La Trinidad and Baguio City, the academe, national line agencies, representatives from the private sector, several government-owned and controlled corporations, and a number of non-government organizations (NGOs). The two LGUs’ commitment to the coalition was established via the signing of a Memorandum of Understanding between La Trinidad Mayor Gregorio Abalos Jr., representatives of Baguio Mayor Mauricio Domogan, and officials of the University of the Philippines Baguio, University of the Cordilleras, Saint Louis University, and Benguet State University (Cabreza 2011 in “Schools unite”).

Efforts to rehabilitate the Balili River, the waters of which flow from 23 tributaries in the city, were stepped up by way of the coalition’s activities, after it was found in early 2011 that the monthly clean-up drives conducted by the city had done little to reduce levels of pollution in the river before it arrives at La Trinidad and Sablan, and drains into the Naguilian River (Opiña 2011). The Baguio LGU had already received criticism from La Trinidad in connection with the continuing pollution of the Balili River, which has been receiving solid and liquid waste from barangays around its eight headwaters, as well as runoff water from the Baguio abattoir and main market.

According to Cabreza (2011 in “Schools unite”), the academic institutions involved in this latest initiative are tasked with providing data on the Balili River’s chemical and biological makeup, and sharing potential “technology, biological remedies, and behavioral techniques” to aid in rehabilitating the river. In terms of sustainability and funding,

University of the Cordilleras' President Ricardo Pama shared the information that the project's academic partners had spoken to Guangzhou University in China regarding a possible funding partnership to sustain the movement, which is also supposed to allow communities along the riverbanks to participate in clean up and protection activities (Cabreza 2011 in "Schools unite").

Updates on the coalition's latest activities were obtained through an interview with a representative of one of the project's academic partners. According to this resource person, the coalition has been focusing on completing the requirements for the Balili River to be established as a Water Quality Management Area (WQMA). IT was reported that the coalition's timetable for this is until September. This source also gave updates based on the project's key result areas:

1. Research: University of the Philippines undergraduate students recently conducted a study on the drivers of pollution in the Balili River for one of their classes. Additionally, the coalition plans to invite other universities to conduct their own research in order to cover as many bases as possible. It was admitted that the coalition is having difficulty getting data on the biophysical characteristics of the Balili River because they are short of funds. An initial testing of soil and water was carried out in December, however, although there is as yet no report of the results.
2. Information and Education campaigns: a poster-making contest and logo-design contest were organized to help raise awareness on the project. A documentary on the Balili has also been produced; however, this is still marked for editing because there are fears that the existing version might affect the market for strawberries grown in La Trinidad.
3. Governance: Apart from the WQMA application, the coalition also plans to involve the barangays and organize a summit for the barangays along the Balili, including all 16 of the Barangays in La Trinidad. A meeting was held on April 21 to update coalition members and barangays on the latest data and to get the barangays involved so they could participate directly in the clean-ups
4. Reduced Dumping: There is a DENR program called "adopt an *estero*" that involves not just clean-up activities but also assigns participants a specific area to carry out IECs and planting, which should make the entire task more manageable. This same source shared that CEPMO feels that the Baguio LGU is doing its part in connection with the coalition's activities by carrying out regular water dialogues with communities along the Balili River.
5. Improved Infrastructure: This is the key result area that is lagging behind in terms of accomplishments. Although the Department of Public Works and Highways (DPWH) has an ongoing flood-control infrastructure project that is funded by the Japan International Cooperation Agency (JICA), it appears as though the infrastructure cluster has not been meeting regularly.

Overall, this resource person says that the coalition is still very active and have perfect attendance during their meetings. He commented that the DPWH just has to identify which structures/establishments drain sewage directly into the Balili River. Hopefully, he said the WQMA will be formalized soon.

In terms of budget, as discussed earlier, a lot of IEC activities that were planned during formulation of the budget request, actually have to do discharge of waste into waterways and, in particular, focus on Balili River, which the solid waste division representative said is in the hands of the liquid waste division.

Municipality of La Trinidad

Solid Waste

Institutional Set-up

The Municipal Agriculture Office, in cooperation with other offices, handles many of the environmental management functions in La Trinidad. In terms of solid waste, in cooperation with staff dedicated to waste management concerns, the Municipal Health Office is also supposed to serve a role in the implementation of RA 9003 as part of its health regulatory functions (“Municipal Health Office” n.d.).

Waste Generation and Composition

According to the La Trinidad Solid Waste Management Plan (2004), which was approved in November 2004 as per Council Resolution No. 170-2004 during the term of then-Mayor Nestor Fongwan, the LGU’s waste has a high organic composition due to the presence of the trading post, which generates 16 tons of waste from the vegetable trimmings alone. Still, the LGU recognized, even back in 2004, that apart from increases in volume, the waste composition of La Trinidad is bound to undergo a change towards a higher percentage of inorganic waste, given the slowly increasing number of fast food restaurants and other big establishments (La Trinidad Solid Waste Management Plan 2004).

Waste Generation by source, as of 2003, can be viewed in the Table below:

Table 7. La Trinidad Waste Generation by Source (in metric tons per day), 2003.

Source	Wate Generated (Metric tons per day)	% Share
Residential	40	52%
Commercial	5	7%
Institutional	2.5	3%
Markets	26	34%
Agriculture	2.8	4%
TOTAL	76.3	100%

Source: La Trinidad Solid Waste Management Plan 2004.

During an interview with one of the municipality's waste management personnel, it was revealed that La Trinidad's solid waste generally falls into three classifications: *residuals*, which are taken care of by the municipality and are brought to the ESL for processing; *biodegradables*, which are supposed to be collected and composted at the barangay level; and *recyclables*, which are also meant to be handled at the barangay level and brought to junkshops. The 40 tons of garbage generated from the Vegetable Trading Post are brought directly to La Trinidad's aerated composting facility located a short distance from the ESL (Sinumlag 2011 in "La Trinidad launches").

Despite the above rules on segregation and collection, one source said that most communities have no composting area and lack the budget to properly handle their waste and so the barangays still have problems with processing their biodegradables. It was also admitted during this interview that some barangays still practice mixed dumping, with waste segregation being more problematic in areas where there are boarding houses. Because of these issues, the municipality actually plans to also collect biodegradables, although they will also propose that each barangay have its own compost facility, even if this is only capable of "partial composting" so that at least the time spent to complete the composting process at the LGU's composting facility (around 30-45 days) will be reduced. This source remarked that even just "50 percent composted" at the barangay level before it is brought to the La Trinidad facility would already go a long way.

Programs and Projects

Among the LGUs of Benguet, the solid waste management system of the Municipality of La Trinidad is supposed to be exemplary. According to Benguet Provincial Governor Nestor Fongwan, the La Trinidad LGU started conceptualizing its "comprehensive ecological solid waste management system" in 1994—a system they envisioned would include a sanitary landfill, leachate pond, bio-reactor equipment to be used in composting, and a material recovery facility (as cited in Cleto 2011). In 2010, however, an interview with a representative of the La Trinidad Mayor's Office revealed that local laws on solid waste management—Ordinance No. 53-98 Providing for a Comprehensive Solid Waste Management of the municipality, which was meant to serve as guide in the control and regulation of generation, storage, collection, transportation, disposal of solid waste; and Executive Order No. 03-2009 for the issuance of citation tickets for the enforcement of penalties provided in ordinance 53-98—have yet to be enforced (Cleto 2011).

In 2010, the municipality's solid waste facilities included Benguet's only controlled dump facility located in Barangay Alno (see, 2009 as cited in Cleto 2010(2)) in a plot that, according to one source, used to belong to indigenous peoples before it was sold to the Capuyan family, from whom La Trinidad purchased 10 hectares of land. The municipality had run into difficulties trying to obtain the required clay lining for an ESL ("La Trinidad Still Lacks" 2009 as cited in Cleto 2010 (2)). At that time, La Trinidad's official website stated that the LGU's solid waste management initiatives also included advocacy on waste reduction, segregation, recycling and reuse; a materials recovery facility; and a composting facility ("Solid Waste Management 2" 2010). The website also included the information that around 85,281 tons (21 dump truck loads) of garbage is generated daily

in La Trinidad, with most waste coming from residential areas, commercial areas, and the trading post.

One of the municipality's solid waste management personnel, however, shared the information that the municipality's old dumpsite in Sitio Buyagan, Poblacion has been considered completely closed ("total closure") since January 1, 2011, which is when the ESL (see Figure 11 below) became fully operational. According to Sinumlag, (2011 in "La Trinidad launches"), this total closure is linked with petitions that arrived after Mayor Abalos assumed office. He then visited the old dumpsite and witnessed the urgency of closing the facility, given that the garbage leachate was flowing to the river.

Figure 8. La Trinidad's Sanitary Landfill, Barangay Alno.



According to interviewed solid waste personnel, it had been a struggle for La Trinidad to get social approval for the ESL: it had taken them years to bargain and explain to the residents of Barangay Alno that they weren't planning to put up another open dumpsite. In the end, he said, the community requested assistance in the form of building a health clinic, road widening, and priority employment in the ESL – all of which the municipality was happy to provide them.

An additional difficulty the municipality encountered in constructing the ESL has to do with the distinctive terrain of the Cordillera and a large chunk of its ESL expenses went into site development—leveling, excavating, establishing where to divert the rainwater and constructing the retaining wall. An interviewed solid waste management personnel described the process as an “engineering nightmare” and said that, according to law, an ESL cannot be established in an area with slopes beyond 60 percent but an exception had to be made in the case of Alno, since there was no potential site that meets that particular criteria.

Thus, the Municipality of La Trinidad is now the only LGU in the Cordillera Administrative Region (CAR) that operates an ESL in fulfillment of one of RA 9003’s directives (Agreda, 2011; in “Open dumpsites”). According to Agreda (2011), experts feel that the topography of the Cordillera is endangering the residents of LGUs still operating open and controlled dumpsites. After the Irisan trash slide, DENR Secretary Ramon Paje advised LGUs having difficulty complying with the ESL mandate of RA 9003 to form clusters with neighboring LGUs. In considering how to push LGUs to prioritize the proper implementation of RA 9003, the DENR is also considering filing cases against noncompliant LGUs.

Solid Waste Budget and Funding

The La Trinidad Solid Waste Management Plan (2004) states that most of the LGU’s solid waste management funds come from the 20 percent Development Fund, and from the General Fund of the Executive Services, the Health Office, and the Agricultural Office (La Trinidad’s solid waste management expenditures for the years 2001 to 2003 can be seen in Table 8).

Table 8. Appropriations for La Trinidad's SWM Activities from 2001 to 2003 (in Pesos).

	Budget 2003	Budget 2002	Budget 2001	Funded 2003	Funded 2002	Funded 2001	% Funded 03	% Funded 02	% Funded 01
I. PERSONNEL SERVICES	4,608,695.00	4,758,695.00	3,888,001.00	5,813,154.00	5,502,557.00	5,035,312.00	79.3%	86.5%	77.2%
A. Personnel Services (PS)	2,740,696.00	2,640,696.00	3,043,477.00	4,290,694.00	4,080,117.00	3,701,119.00	63.9%	64.7%	82.2%
Salaries (regular)	2,340,696.00	2,340,696.00	2,111,808.00						
Wages (casuals)	400,000.00	300,000.00	931,669.00						
B. Other PS Items	1,867,999.00	2,117,999.00	844,524.00	1,522,460.00	1,422,440.00	1,334,194.00	122.7%	148.9%	63.3%
ACA/PERA	408,000.00	408,000.00	216,000.00	516,000.00	492,000.00	456,000.00	79.1%	82.9%	47.4%
PIB	68,000.00	68,000.00	36,000.00						
GSIS Premiums	280,883.00	280,883.00	25,920.00	375,734.00	341,021.00	325,413.00	74.8%	82.4%	8.0%
PAG-IBIG & Philhealth Prem.	80,300.00	80,800.00	21,600.00	154,800.00	147,600.00	136,800.00	52.2%	54.7%	15.8%
ECC	29,258.00	25,000.00	7,020.00	?	?	?			
Christmas Bonus	365,058.00	365,058.00	265,984.00	475,926.00	441,820.00	415,981.00	76.7%	82.6%	63.9%
Clothing Allowance	136,000.00	136,000.00	72,000.00	?	?	?			
Overtime Services	500,000.00	750,000.00	200,000.00	?	?	?			
II. MOOE	1,225,000.00	880,000.00	770,000.00	1,169,164.00	434,325.00	843,644.00	104.8%	202.6%	91.3%
Gas and Oil	575,000.00	480,000.00	320,000.00	386,750.00	270,000.00	359,349.00	148.7%	177.8%	89.0%
Maintenance and Vehicles	650,000.00	400,000.00	450,000.00	670,422.00	124,989.00	411,205.00	97.0%	320.0%	109.4%
Supplies				105,992.00	39,336.00	58,089.00	0.0%	0.0%	0.0%
Capability building/training				6,000.00		15,000.00			
III. PROGRAMS & PROJ	14,600,584.15	9,710,000.00	633,893.00	14,265,744.00	6,293,173.00	433,894.00	668.5%	316.6%	146.1%
Solid Waste Management (MHO) & Clean & Green Program	546,000.00	510,000.00	633,893.00	219,360.00	248,173.00	433,894.00	248.9%	205.5%	146.1%
Promotion of Home Composting (OMAG)	50,000.00	50,000.00		41,800.00	45,000.00		119.6%	111.1%	

Purchase of Heavy Equip- ment (SWM Facility)	1,000,000.00				1,000,000.00				100.0%			
Contruction of Road for SWM Facility	1,000,000.00				1,000,000.00				100.0%			
Support to SWM Initiatives	150,000.00				150,000.00				100.0%			
Establishment of Compost Facility/Equipment												
Purchasing of Garbage Truck			1,000,000.00									
Establishment of SWM Model Communities			2,000,000.00									
Purchase of SWM lot	11,854,584.15		150,000.00					6,000,000.00				
Total	20,434,279.15	15,348,695.00	5,291,894.00	21,248,062.00	12,230,054.00	6,312,850.00	96.2%	125.5%	83.8%			

Source: La Trinidad Solid Waste Management Plan 2004.

The amount appropriated in 2001 for their solid waste management activities was approximately P5M, and it was expected that their expenses would generally stay around this figure if the “status quo” would be maintained.

During a visit to La Trinidad’s ESL, it was observed that the LGU assigns individuals to monitor the garbage trucks enter the facility. This helps the LGU check that waste collection is being carried out properly and also allows solid waste personnel to stay up to date on the volume of garbage entering the ESL and make projects on the facility’s lifespan. Thus, they were able to see that the ESL, which had been proposed to last for 30 years, is actually filling up faster than expected. According to one of the municipality’s solid waste management personnel, the ESL has “four cells” but the first cell, which was expected to last for one year and eight months was already almost filled up after just six months. This prompted municipal officials to start searching for “other technology” that would be able to reduce the amount of garbage the ESL would have to hold.

Thus, in 2011, the municipality took out a loan from local banks to purchase the “Zero Waste Management System” or “black hole” waste-processing machine (see Figure 9 below) for P58 Million (Catajan 2011 in “Garbage disposal project under fire”).

Figure 9. La Trinidad’s “Zero Waste Management System” in Barangay Alno.

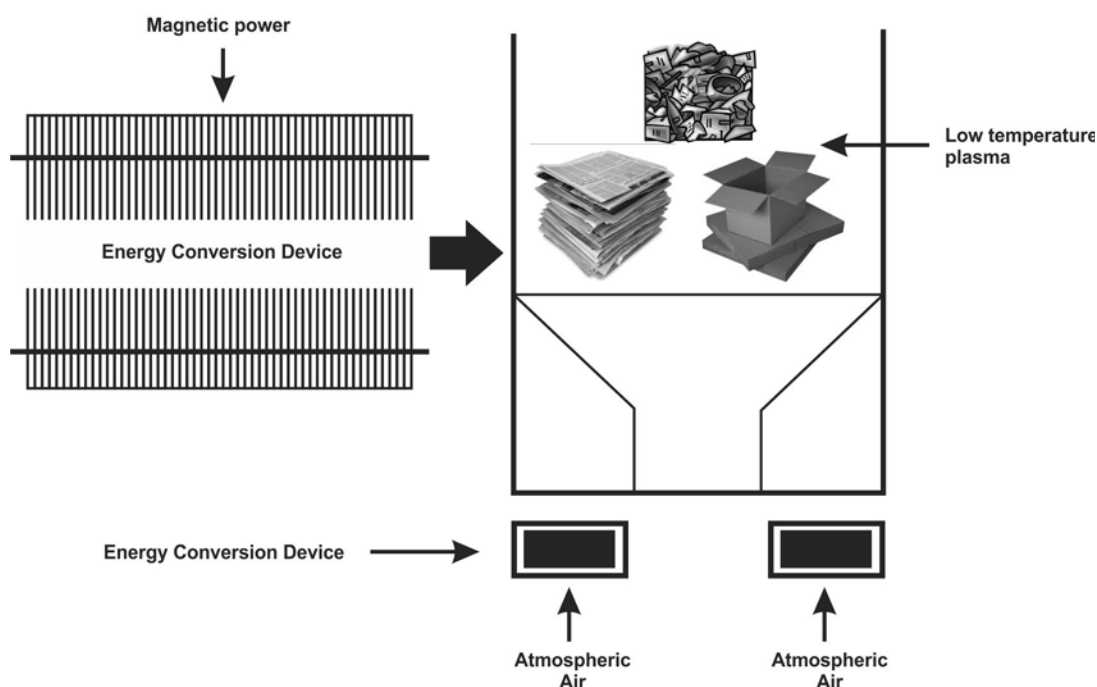


ESL Operations and the Black Hole Technology

In an article by Catajan (2011 in “Garbage disposal project under fire”), the black hole machine was described as a “magnetic garbage decomposer using low temperature plasma to decompose garbage” (see Figure 10 below). Additionally, this technology is said to function even without fuel or electricity (Ngabit-Quitasol 2012) and is supposed to allow decomposition of almost all kinds of garbage—even radioactive materials such as used batteries (Sinumlag 2011 in “La Trinidad launches”), with the exceptions of glass, steel, gold, copper, silver, and ceramic—without producing any toxic gases (Catajan 2011 in “Garbage disposal project under fire”). According to Bitog (2011), the black hole technology can break down 19.3 cubic meters of garbage in 24 hours, with only water vapor and “mokusaku” (wood vinegar, which Sinumlag (2011 in “La Trinidad launches”) writes can also be used as a pesticide, soil moisturizer and deodorant) as its by-products.

Figure 10. Diagram of the garbage decomposition process used by the Black Hole technology.

Air passing through the energy conversion device is converted to low temperature plasma. Organic materials are exposed to the plasma, dehydrated and decomposed to a trivial amount of ashes.



Mayor Abalos shared his hope that the technology would make a significant contribution in terms of managing the municipality’s non-biodegradable waste, even if the volume of waste it processes in one day is still much less than La Trinidad’s daily production of 40 tons of garbage (Ngabit-Quitasol 2012). An interviewed solid waste management staff member echoed this hope, saying that the technology is still being tested but if it can reduce the volume of garbage by even 50 percent, then that will already be a very good thing.

According to Ngabit-Quitasol (2012), one of the main concerns of La Trinidad's officials is the speed at which the municipality's ESL is getting filled up, given that there is no other area within La Trinidad that will pass the Environment Management Bureau's requirements for a sanitary landfill site. He added that other towns would not be willing to host a dumpsite.

Unfortunately, the acquisition of this technology has not been without its share of controversy, and moves had been made to block the purchase of this machine via a petition that also requested that the municipality first obtain "scientific validation" of the technology from the Department of Science and Technology (DOST) and the technical staff of the Department of Environment and Natural Resources (DENR) (Catajan 2011 in "Garbage disposal project under fire"). Said petition was addressed to the DOST, DENR, Benguet Governor Nestor Fongwan, the Land Bank of the Philippines, National Solid Waste Management Board, and Commission on Audit and Department of Finance but was received by the local council of La Trinidad after it had approved the P58 Million loan.

The furor over the Black Hole technology did not end with its installation in the first week of November 2011. Mayor Abalos, NGO Support System Corporation representative Wisdom Amahah, and the technology's inventor Akio Shigeta launched the technology at the La Trinidad ESL, with Shigeta announcing that the specific model installed is the first of its kind in the world (Bitog 2011). Although a smaller, similar facility exists in Japan, the one at the Alno ESL was described as specifically created to handle the type of waste generated in the municipality (Sinumlag 2011 in "La Trinidad launches"). According to Bitog (2011), the municipality had, at that time, made a downpayment of P18 Million and the technology's efficiency would be apparent after one month of uninterrupted operation.

The troubles over the black hole continued, with graft charges being filed against Mayor Abalos in late December 2011. According to Ngabit-Quitasol (2012), a complaint affidavit accusing Mayor Abalos of "dishonesty, grave misconduct, and graft and corrupt practices" was received at the Office of the Ombudsman, filed by Mr. Enrique Lando and Mr. Normal Simsim. Mayor Abalos expressed his readiness to face the complaints, and emphatically stated that no law had been broken since the process of procurement had not yet begun.

Ngabit-Quitasol's article (2012) also hinted that political maneuvering may have been involved in the filing of the complaint, given that Mayor Abalos had served as a hearing officer for a case filed against Mr. Lando and Mr. Simsim by former Mayor Artemio Galwan. Mr. Lando and Mr. Simsim had been employed with La Trinidad's Engineering Office when they were charged with "dishonesty, grave misconduct, receiving of fee or gift in the course of doing official duties, soliciting or accepting gifts or any monetary value in the course of doing official duties and for conduct prejudicial to the interest of the service." Mayor Abalos had then dismissed Mr. Lando and suspended Mr. Simsim, based on his hearing of the case (Ngabit-Quitasol's 2012).

Despite the above complaints Okubo (2012) points out that there have been no complaints about the efficiency of the Black Hole technology, unlike the complaints levied

against Baguio City's ERS Machines. This is supported by information obtained during an interview with one of La Trinidad's solid waste management personnel, who explained that the controversy surrounding said technology mostly has to do with the cost of the machine, given that it isn't capable of handling all of the municipality's waste. He added that the municipality is now working with engineers from UP Diliman to try to increase the machine's capacity.

An additional issue, however, was revealed by another source from the municipality, who said that the real problem with the Black Hole technology has to do with a breach of contract on the side of the machine's inventor. This same source also clarified the role of the engineers from UP, saying that they had also been tapped to appraise the machine and lend their technical expertise to assist the municipality in the black hole's operation.

An Exemplary Composting Facility

Apart from the previously discussed ESL and Black Hole technology, La Trinidad's current solid waste management system also involves several other components. One of these is the composting facility inaugurated on January 5, 2011, located close to the ESL in Barangay Alno, and established with a P4 Million grant from the Embassy of Japan and a counterpart fund of P760,000 from the LGU (Laking 2012). According to Laking (2012), the composting facility project stemmed from the municipality's desire to reduce environmental pollution via recycling the biodegradables wastes from the trading post.

It may be remembered that one of the reasons Baguio's LGU has not been able to obtain a license to sell the compost produced by the ERS was an issue with the quality of compost. In contrast to this, Laking (2012) writes that Mr. Jay Sano of the La Trinidad Municipal Agricultural Office has described the compost produced by the municipality's facility as meeting the "Philippine National Standards for Organic Fertilizers."

An interviewed solid waste management personnel explained that said facility is managed by the Municipal Agricultural Office, and that La Trinidad practices both aerated composting and "traditional composting." The system in the new facility however, was described in the article of Laking (2012) as a "practical model following the technology of aeration and mixing."

Figure 11. Alno Composting Facility.



According to one of La Trinidad's solid waste management personnel, due to the great volume of garbage from the trading post, the LGU has asked the farmers to try to bring at least the cabbage and *pechay* (Chinese cabbage) trimmings back to the source, which would leave just broccoli and cauliflower waste for the municipality to gather. Still, this has been difficult for the LGU to enforce, and it was revealed that only about 25 percent of the farmers have been complying with the request. This same source expressed a level of understanding for the sentiments of the remaining 75 percent, whose waste the municipality still collects. He said that it is really the burden of the municipality to develop an efficient waste management system also, he understands the concern of the farmers that carrying the cabbage and *pechay* trimmings will promote the deterioration and rotting of the rest of the load they carry back, including provisions they get from the municipality.

Despite concerns regarding volume, however, La Trinidad's operation of its composting facility has been generally successful. According to Laking (2012), 2,787 bags of compost were sold in 2011 for a profit of P334,440. These bags were produced from 600 tons of vegetable waste mixed with sawdust and rice hulls (Laking 2012).

Figure 12. End product of the composting process—bags of fertilizer.



A staff at the compost facility added the information that the different components each form 30 percent of the mix, and that they sometimes also mix the vegetable waste with nipa. According to this source, the dry matter (agricultural by-products) they mix with the vegetable waste is bought from San Fabian, Pangasinan.

Figure 13. Dry Matter.



The purpose of this dry matter is to balance out the liquid from the vegetable trimmings, which is why they generally try to use only broccoli and cauliflower trimmings, which have less water content. When they put in vegetables with higher water content, then they also have to increase the dry matter component.

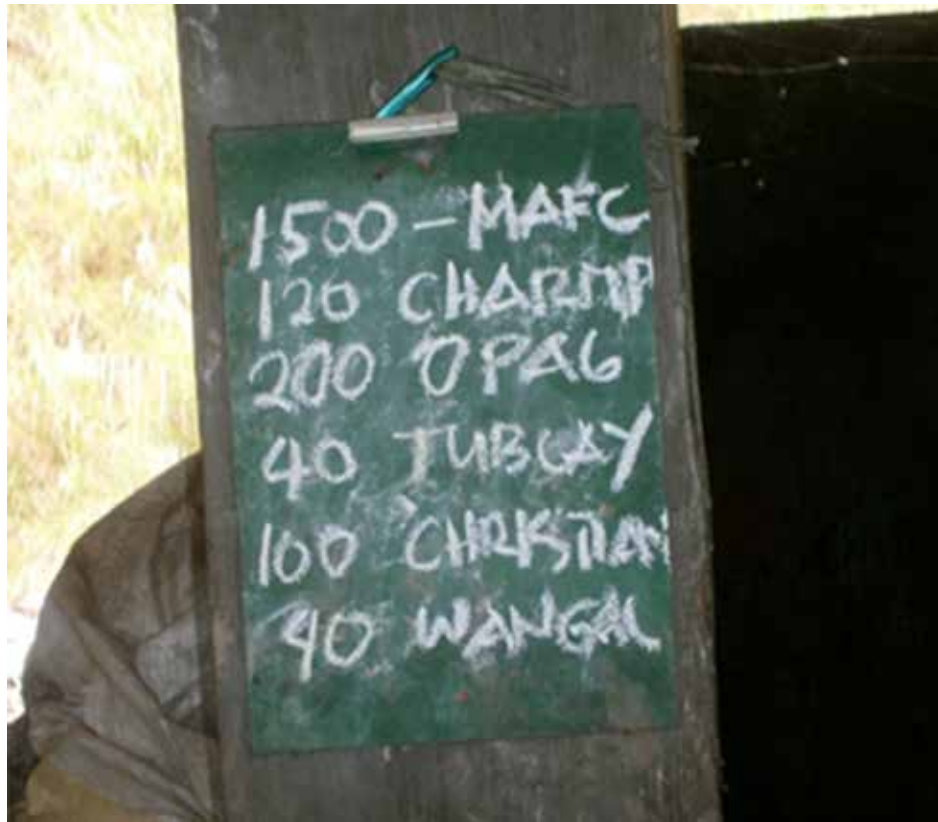
At present, four (4) staff members who work from 8 am-5 pm man the facility. One of the personnel explained that there are nine composting stations that the waste has to pass through during the composting process. The waste is left for six days in each station before being loaded into the next station, and a blower is used to facilitate aeration of the decomposing waste twice in the morning and twice again in the afternoon.

Figure 14. Composting “Stations.”



This staff member also commented on the high level of demand for La Trinidad’s compost, saying that the amount they produce is really not enough to meet said demand. He said they also have delivery services if the number ordered is high enough—for example, they deliver the compost to the purchaser for orders of around 200 sacks. Each sack contains 50 kilos of compost and costs P120. The waste management staff interviewed proudly stated that farmers were free to purchase compost from them although interested parties usually deal with the Municipal Agricultural Office. According to this same source, most of the buyers are also from La Trinidad, which—impressively—closes the loop of a significant chunk of La Trinidad’s waste.

Figure 15. List of Orders for Sacks of Compost, Showing Number of Sacks.



Apparently, the site already served as the municipality's composting facility prior to the inauguration of the new method of composting in 2011. Staff at the composting facility stated that the Japanese grant was received in 2009 although, at the time, they had used "stirred tank bioreactors" (see figures below) to process their biodegradable waste. This source commented that the reactors are not being used now and that the current system is an improvement over the old one, since the waste still had to be shredded manually before these could be loaded into the reactors. Given the volume of waste, the facility lacked the manpower to perform this task efficiently. Also, operating the reactors was costly because these run on electricity. Since these reactors are still operational, although not in use right now, the municipality is considering donating these/trading with another LGU that will be able to maximize their use.

Figure 16. La Trinidad Bioreactors.



Figure 17. Compost Bioreactor, sideview.



Figure 18. Waste Shredder for Bioreactor.

The composting facility also has an area for producing “wood vinegar,” which they spray on the compost to neutralize the odor. The raw materials for the wood vinegar are “half-dry coconut husks,” which they just load into the oven-like device pictured below, and then set on fire via blowtorch. According to the staff of the composting facility, it takes two days to burn each load, which is composed of around 35 sacks of coconut husks that are first dried under the sun (it takes longer, around 3-4 days, for the husks to burn if they are not first sundried). During the burning process, the vapor rises and is trapped in a chamber of the device. The liquid formed from the vapor will become the wood vinegar once this is fermented for six (6) months.

Figure 19. Tarpaulin Poster Explaining Mokusaku (Wood Vinegar) Project.



Figure 20. La Trinidad Mokusaku (Wood Vinegar) Facility.

Figure 21. “Oven” component of the Mokusaku device.



Figure 22. Fermenting Wood Vinegar.

Apart from the large shed covering the nine composting stations described above, there is a smaller area on the same site for windrow composting. This was actually built prior to the main structure, and is used for processing biodegradable and food waste from the Central Business District and residences in the Poblacion. Staff of the facility stated that other barangays could also request that the facility be used to process their waste while the facility can still accommodate it.

Another feature of La Trinidad's impressive composting facility is a vermicompost pit (see Figures 23 and 24 below), although this is still a work in progress. During the visit to the facility, one of the facility's personnel remarked that they should actually cover the vermicompost pit so that the worms "won't sleep." He added that vermicomposting is supposed to handle processing of materials such as cow manure, bananas, and grass. The LGU also intends to eventually sell the compost produced once the system is established

Figure 23. La Trinidad Vermicompost area.



Figure 24.
Composting Facility
Staff explaining La
Trinidad's Vermicom-
posting efforts.

Problems with segregation; Problems with the volume of waste

Unfortunately, it was admitted during the field visit to the site that the aerated compost area cannot accommodate all of the vegetable trimmings from the trading post and so the rest is brought to the “open composting” site. This source said that they load 15 tons of vegetable trimmings every six days, although collection from the trading post is carried out every day with the use of three dump trucks.

Solid waste management personnel say that the “open compost” pit (see Figure 25 below) is only a secondary facility and that the space it is now taking up beside the ESL will be used to extend the latter. Once biodegradables are deposited in the open dump, however, they cannot be transferred to the aerated composting facility, because they are already mixed with earth and will not produce quality fertilizer. So there is an area that almost approximates an open dumpsite, but is generally used only for the biodegradables that cannot be accommodated in the aerated compost facility.

Figure 25. Municipality of La Trinidad's “Open Compost” Area.



This highlights the need to keep looking for ways in which to reduce the volume of waste brought to the landfill and composting facility. According to the waste management staff interviewed, they have been trying to address this by negotiating with farmers at the trading post to trim their vegetables at source so that only a small amount of trimming is carried out at the trading post. Unfortunately, it has proven difficult to gain the cooperation of the farmers on this issue.

Another issue raised by staff at the composting facility is that they only have one backhoe for transferring and loading waste into the different stations. This results in delays, he said, especially when the backhoe gets a flat tire.

Another concern of La Trinidad's solid waste management staff is that they usually end up having to segregate the waste delivered, because segregation at source is still weak. This despite how LGU officials have been keeping up their efforts to encourage the people of La Trinidad to become more disciplined in their waste disposal practices and to continue segregating their waste, given that they recognize the Black Hole technology cannot solve all the municipality's waste management issues even should this go as far as *reducing* the volume of waste already in the ESL (Sinumlag 2011 in "La Trinidad launches").

Looking Forward

Despite the troubles the municipality is also having with the new technology they have been trying to use for SWM, it could be seen from interviews that the establishment of La Trinidad's ESL despite the LGU's relatively low budget is a source of pride for their solid waste management personnel.

They are also aware that their ESL does not provide a permanent solution to the solid waste situation. According to solid waste management staff interviewed, they are worried that the waste problem will eventually become as bad as it is in Baguio City. This interviewee said that they also sympathize with the Baguio LGU, which has the funds to establish an ESL but is having a very difficult time getting social approval from any community for the siting of the ESL.

Another representative of the LGU's solid waste management team mentioned that, aside from considering other potential ways of managing the municipality's waste, they are also aware of the need to update their existing Waste Management Plan. This source said that the contents of the plan (in terms of projects) get "updated" with changes in administration, but current Mayor Abalos had generally just continued with the work of previous administrations apart from his introduction of the Black Hole technology.

Interviewed personnel also reflected on the impacts the Irisan trash slide had on their own waste management. According to one source, the slide was like a "vindication" for La Trinidad since they have been criticized because of the expense of their waste management system, given the limited funds of the municipality. Additionally, the slide was an eye-opener and a warning of what the future may bring if La Trinidad does not find a way of reducing waste. This source added that it was difficult for La Trinidad to put up the ESL because they had no pattern to follow in the Cordillera.

Apart from the major problems encountered by the municipality in their experiments with new technology, the current solid waste management system in La Trinidad is quite commendable. The planning system they use to develop programs and projects appears to be highly participatory and multisectoral and they also seem to give relatively high importance to community-led solutions and initiatives, even back in 2010 (Cleto 2010). A solid waste management staff member interviewed for the present study also said that the formulation of their waste management strategies is a “concerted effort” between “many offices of all departments.” This source cited the development of their ESL, which he said had an IEC component, an engineering component and also involved the agricultural office for the composting aspect of the project. According to this interviewee, consultations with different sectors is a prerequisite for building a sanitary landfill and they took this part of it seriously and made sure that social acceptability was obtained for the Alno site, which is why it took them almost 10 years to complete this completely locally-funded project.

He added that they had approached the National Solid Waste Management Board for assistance with this project, but the assistance given to them took the form of technical advice instead of financial help. Based on this interview, it appears that budget is the major limiting factor in their solid waste management activities. In fact, interviewed solid personnel remarked that they don’t need any technical help, what they really need is financial assistance.

Liquid Waste

Solid Waste Management staff identified La Trinidad’s Rural Health Unit when asked about which office would be in the best position to answer questions regarding the municipality’s liquid waste management activities. Apparently, their liquid waste management generally just centers around routine sanitary inspections, where they visit the different barangays on a regular basis as part of their “healthy barangay evaluation” and check on the community’s sewer connections. According to one of the municipality’s sanitary inspectors, they also check the connections of the schools and report the findings to the Department of Health. These regular inspections were described as team efforts involving representatives of the Department of Interior and Local Government (DILG), the Agricultural Office, the Municipal Environment and Natural Resources Office (MENRO), and the Solid Waste Management division.

As was mentioned earlier, La Trinidad’s liquid waste management is linked to Baguio’s for several reasons, one of which is the municipality’s lack of its own sewage treatment plant. According to interviewed Rural Health Unit personnel, several establishments in the municipality, including the La Trinidad Water District (which also handles processing of waste water before this is used to irrigate the strawberry fields) and the Benguet General Hospital, have their own “mini-treatment plants”; however, individual households take care of their own liquid waste by having their own septic tanks. When local communities have problems with full private septic tanks, they can contact the municipal health unit to assist them in cleaning the tanks and bringing the waste to the Baguio Sewage Treatment Plant for processing. This source person added that their office sometimes receive com-

plaints about some households that discharge their liquid waste indiscriminately, and it is their job to go to the communities to follow up on these complaints.

Other liquid waste-related projects of the municipality include the yearly provision of water-sealed toilet facilities to local communities. According to one of the municipality's sanitary inspectors, the Ongpin Foundation has assisted the local government in distributing around 50,000 plastic toilet bowl units or "P-Traps" per year to different communities. The barangay officials then check to make sure that the recipient households have actually installed the water-sealed toilets and then issue a "Certificate of Compliance" to the household.

Another link between La Trinidad's and Baguio's liquid waste management involves the recent activities for the Balili River's revitalization. The Balili River is identified as the sole natural drainage of La Trinidad Valley and is described as a receptacle for runoff from residential and commercial areas during periods of rainfall (La Trinidad Solid Waste Management Plan 2004). The Balili River section of La Trinidad is downstream from Baguio, so pollutants that come from Baguio flow down to La Trinidad. Activities in La Trinidad then make their own contributions to the state of this natural drainage, as observed by a concerned citizen in a letter published by the *Midland Courier*. According to the writer, a drainage system is being constructed along Kms. 4 and 5 of La Trinidad, the design of which has it ending directly at the River ("LT drainage will contribute" 2012). This, the writer concludes, will carry plastic wrappers and chemical pollutants from different industries through the drainage and into the river. She thus called on the municipal government and DPWH to adjust the plans in order to avoid this situation.

One of the aspects of Balili revitalization that La Trinidad is highly involved in is the Enhanced Data Collection key result area. Specifically, the Benguet State University is one of the institutions participating in the development of a "compendium of researches, and research proposal with funding options" to increase the knowledge base surrounding the River's current condition (Aro, 2011 in "Benchmark data collection"). According to Aro (2011 in "Benchmark data collection"), the research compendium is headed by Dr. Aurea Marie M. Sandoval, Dean of BSU's College of Arts and Sciences, and is working on establishing a proposed Balili River Learning Resource Center to be based in BSU.

Once again highlighting the link between liquid and solid waste and the management of water resources is the coalition's emphasis of "behavioral change" as a foundation of revitalizing the Balili River (Quitasol 2012). According to Mayor Abalos, changing how people view the river and, in connection with this, turning them away from dumping their garbage in the river will be the most effective way of saving the Balili River.

IV. CONCLUSION AND RECOMMENDATIONS

First, if we are going to analyze the solid and liquid waste situations of Baguio and La Trinidad in terms of the Ecosystems Approach, it is obvious from the start that our view of things will be a bit skewed towards the “output” side of the system.

In general, the Ecosystems Approach is not utilized, at least in an integrated manner, in the official planning system of either Baguio City or La Trinidad, although elements of these do appear here and there in the respective LGUs’ waste management policies and strategies.

The main solid waste management issues confronting the Municipality of La Trinidad are different from those confronting Baguio City, although there are also certain similarities in the failure of technological solutions to live up to expectations. The links between Baguio City and the Municipality of La Trinidad are clearer when it comes to liquid waste management given shared concerns over the condition of the major waterway running through the two LGUs; namely the Balili River. This is one area in which the two LGUs have already started – and should continue – working together. Care should be taken though that this project does not fall victim to what is one cause of the failure of past projects to really make a difference; namely, a lack of creativity in approaching the issue. Proposed activities behind the coalition such as regular clean-ups and sustained IECs are good, but given that behavioral change has already been identified as a key driver for the project’s success, there is still the question of what exactly is being done in terms of developing strategies for altering behavior? There are emerging fields and disciplines that may still be untapped at present, such as Environmental Psychology (which focuses on) that the coalition can also explore, in keeping with the Ecosystem Approach’s principles of tapping different disciplines. And also, the “business as usual” approach in dealing with waste management, which Baguio has followed for so many years, has obviously failed.

Major Waste Management Issues

In their waste management activities, both La Trinidad and Baguio City have encouraged the recycling of materials that would otherwise go into the dumpsite but, in the case of both LGUs but especially in the case of Baguio City, the campaign for recycling has been pushed aside given focus on other, admittedly more pressing aspects of the waste management situation such as the need to increase rates of segregation, and also halt the indiscriminate disposal of waste.

One key difference between the situations of the two LGUs is that Baguio City has a more pressing and basic concern than trying to reduce the amount of waste that ends up in the dumpsite, which is the current major issue in La Trinidad, given that Baguio City has no long-term, sustainable solution to where to put its waste.

This is the single biggest issue confronting Baguio City in terms of Solid Waste Management – how to comply with one of the major requirements of RA 9003; where to develop our ESL and solve what has long been a dangerous, risky, and embarrassing situation.

Potential Applications of the Ecosystem Approach

In finding an answer to the question of where to put its waste, Baguio City can actually already use the principles of the Ecosystems Approach, given that this mostly pushes for inclusive and participatory, multisectoral planning and development that, in line with Principle 2 of the Ecosystems Approach, “ensures that management is decentralized to the lowest appropriate level.” In line with the observation of the resource person who works to haul waste and is from the community that hosts the ill-fated Irisan dumpsite, it might be more appropriate and effective to encourage pro-environmental waste management behavior and/or tailor solutions to the circumstances at the purok level. The Ecosystems Approach holds that decentralizing management to the lowest appropriate level and involving all stakeholders brings management closer to the ecosystem, and encourages “greater responsibility, ownership, accountability, participation, and use of local knowledge” (The Ecosystem Approach Advanced User Guide, n.d.).

The Appropriate Scale of Application

In answer to the original research objective of identifying the most appropriate scale of implementation of the Ecosystems Approach, based on the findings of the study, it is recommended that the principles can be applied on both city-level and community-level scales. There are certain aspects of the waste management problem that must necessarily be addressed at the city level such as where to place an ESL, while other aspects may be more appropriately addressed at the community level. An example of the latter is finding strategies to increase pro-environmental waste management behavior at the household and community level. Different levels of management—from city/municipality-level downwards can be involved in this, since in all levels there is still a need to increase capacity in carrying out participatory planning, and respecting the views/being open to suggestions from sectors that are normally marginalized when it comes to community planning. The results of the study reinforce previous observations that local planning, particularly in Baguio City, is top-down. This is something that **MUST** be corrected.

There is a need for Baguio City and, to a lesser degree, also the Municipality of La Trinidad to diversify their sources of knowledge, which is also tied to community participation and the principle of decentralizing management. There have been studies on the potential utility of traditional knowledge for waste management, commendable waste management practices in traditional communities (see Cleto 2010) that are not mentioned in city-level waste management plans. The principles of sustainable development and the ecosystem approach both encourage “going local” and seeing what can be done by taking a closer look at local characteristics and alternative sources of knowledge, including traditional knowledge and how this can work hand in hand with new and emerging technology.

Issues of Time

It is moot now, since we are long past the stage of having the luxury of much time to solve the problem, but Baguio City can learn a lot from how La Trinidad handled its solid waste issues. The Municipality of La Trinidad was able to think long-term and identify an ESL site in a timely manner, although they did have the model of its neighbor Baguio as a picture of what they did not want to happen. Also it is admirable how La Trinidad's composting facility incorporates many forms of composting, and how they have adjusted this over time based on what they have observed to be more resource-efficient even stepping down from a method that would at first seem more "technologically-advanced" (i.e., reactor-based composting). This is not to say that all advanced-technology options are necessarily not a good idea, but experience in both Baguio City and the Municipality of La Trinidad indicates that both LGUs have to learn to be more careful or take more time in accepting/identifying what the best new technology is, especially since recent new technology acquisitions have been so expensive and have as yet, not lived up to expectations.

Also, although Baguio City obviously does not have the luxury of time in identifying an ESL site, it is important that the LGU does not railroad the process of meaningful consultation, obtaining broad community approval, and establishing social acceptability of the project.

Issues of transparency and community participation are not limited to Baguio City alone: in the Municipality of La Trinidad, the public's knowledge of the issues involved in the operation of the Black Hole machine seem to be limited. In case of legitimate projects that went ahead in a completely aboveboard manner, without any under the table deals, this is problematic because it leaves space for doubts—even unfounded ones—to linger and plague the operation of what may be a perfectly good, sound manner of handling waste. Transparency is important, accountability is important, the people have a right to know how the problems of the LGU are being handled and both LGUs need to find a way in which people can give their feedback in a timely manner.

Overall, this research is very timely given that the solid waste office of Baguio is now looking into the updating of their plan. Although updating of their plan was not mentioned in La Trinidad, it is expected that they will soon be looking at updating this too, given that a significant amount of time has passed since the crafting of their plan and as is always the case anyway, given any planning endeavor, things did not turn out exactly as planned (i.e., the ESL will not last as long as originally projected given current volume of waste generation). But given the issue of limited budget (for both Baguio and La Trinidad) in combination with limited capability of current staff (admitted to by Solid Waste Division representative in Baguio City)—these are the issues they have to deal with. Increasing staff capacity, thinking in the long-term so that the LGUs would not always be reliant on outside help or hiring of consultants from the outside, increasing efforts to tap local organizations and institutions who may be willing to help for minimal amount—these are all important and are in keeping with the principles of the Ecosystems Approach.

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Annex 1: First Baguio Environmental Declaration*

RECLAIM OUR RIGHTS TO LAND, RESOURCES AND ECOLOGICAL SUSTAINABILITY

“Protecting the rights of the poor should take precedence over corporate greed. Genuine development must prioritize the need to ensure ecological sustainability over market profitability. We must never sacrifice people and the environment for short-term benefit of the few.” - Fr. Edwin Gariguez, a Catholic priest who led a group of indigenous community leaders in 2009 in an 11-day hunger strike to protest large-scale mining in Mindoro, and recipient of the 2012 Goldman Environmental Prize.

These words resonate as we, participants of the First Baguio Environmental Summit, unite and resolve to continue our struggle to reclaim our rights to land, resources and a sustainable environment in the City of Baguio.

We are alarmed that Baguio’s environment is now in deep crisis, reaching such state of environmental degradation, that we experience daily its stark impacts. We suffer the evidences of urban blight such as the garbage problem, the lack of water, dying rivers, the poor air quality, traffic and congestion, the increase in natural disasters, food insecurity, unemployment, homelessness, shrinking forest areas and watershed, and biodiversity loss. These phenomena are clear signs that we may be crossing critical boundaries and approaching dangerous tipping points in the state of the city’s, if not the planet’s, environment.

We are concerned that the limited land and resources of Baguio City, originally indigenous peoples ancestral territory and designed as a colonial hill station to serve a population of 25,000, are not stretched beyond its limits. The carrying capacity of the city has already been exceeded. We believe that the development of Baguio City’s land and resources should be managed and planned in a rationale, cohesive and holistic manner to take into consideration the welfare of the people, of future generations and the sustainability of the environment.

* The First Baguio Environmental Summit was organized by Cordillera Peoples Alliance, UP Baguio, Cordillera Ecological Center, Cordillera Women’s Education, Action and Research Center, Open Space, the Baguio Vermi Growers, and Tebtebba.

We are aghast at the wanton disregard by government officials of the people's sentiment in giving priority to profit-generating development for a few elite corporation over the needs and welfare of the majority of the people. We hold the public authorities accountable for their failure to stop this reckless violation of the rights of the Baguio people to land, resources and a healthy environment.

We condemn the manipulation of land tenurial instruments in the city to give favor to the rich and powerful over the rightful ownership claims and access rights of indigenous peoples, actual occupants, settlers and other bona fide residents of the city.

In our desire for a Baguio City that is progressive, sustainable and responsive to the needs and sentiments of its people; in our deep respect for Mother Nature, its ecological balance and integrity of creation; and after thorough and all-rounded discussions and deliberation while keeping the common good of the people of Baguio in mind;

We now forward recommendations, with the expectation that these serve as a guide for our policy-makers, decision-makers and urban planners, as well as our own respective organizations in defining the future development plans of Baguio City.

On Land Use

1. Ensure that the Comprehensive Land Use Plan of Baguio strikes the proper balance between economic development and environmental protection. Ensure that the remaining forest cover, watershed areas and parks of the city are protected, conserved and further developed, while regulating the need for residential, institutional and commercial zones. Conduct wider consultations with the people and communities affected in the formulation of laws, policies, projects and programs on land use.
2. Conduct comprehensive study and enact appropriate legislation to reconcile conflicting land surveys, land use, titles, town site sales application and other tenurial instruments of land disposition in the city. Implement the fast-track programs and recognize indigenous peoples land rights while addressing perennial problem of squatting through mass housing and recognition of rights of actual occupants. Initiate dialogues between the Ibaloi land claimants and settlers in ancestral lands towards resolving issues of ownership and acquisition. Declare a moratorium on demolitions.
3. Investigate illegal and anomalous land transaction, land grabbing, graft and corruption practices in the disposition of land in the city. Punish those accountable for these crimes and initiate measure of redress to correct the injustices committed against rightful landowners and occupants. Uphold the Ibaloi people' struggle for justice over the dispossession of their ancestral lands.
4. Conduct widespread public consultation in Baguio to surface the true sentiments of the people before any further action is taken by Congress to approve the proposed Baguio City Charter.
5. Conduct geo-hazard mapping to determine dangerous land areas in Baguio as a basis for disaster risk reduction and preparedness, while ensuring that this is not

mis-used to justify relocation and/or demolition of informal settlers and rightful owners.

On Garbage and Waste Management

1. Conduct a comprehensive study and hold public consultation and multisectoral dialogues towards arriving at a sustainable solution to the garbage problem of the city. Close down, clean up and rehabilitate the Irisan dumpsite to make it safe for community residents and surrounding barangays.
2. Intensify programs to reduce, reuse and recycle waste in the city. Encourage and support viable household-level and community-level initiatives, as well as indigenous and innovative practices of waste management as an integral part of the comprehensive program of waste management of the city, including the use of vermiculture, the eco-compost receptacle and residual waste terrace.
3. Promote alternative material such as bayong, paper bags, and other alternative to plastics and styrofoam in the city of Baguio, and assert political will for the implementation of the law on the use of plastics.
4. Hold the government accountable for the millions of pesos budget allocated for waste management and information, education campaign. Ensure multisectoral collaboration in waste management and form a working group to study the budget, where is it going to ensure that it is used for its real purpose of waste management.
5. Conduct community grassroots organizing for waste management at the source.

On Management of Land, Water and Natural Resources:

1. Give recognition to the importance of trees in the development of Baguio and their indispensable role in maintaining the environment, land, air and water resources of Baguio City, as well as in mitigating carbon emission, global warming and climate change.
2. Ensure that development plans of Baguio City promote equitable access, use, management and benefit-sharing of the city's natural resources and address the identified priority needs of the city's populace. Guard against to monopolize resources for profit by a few private and foreign corporation and the powerful elite. Conduct a grassroots-based campaign for sustainable pro-people development by starting in our own little ways.
3. Revoke the permit given to SM Prime Holdings for its expansion project. Stop the cutting and earthballing of trees in Luneta Hill and rehabilitate the forest to return it to its original condition. Investigate the status and legality of SM Prime Holding's land ownership over Luneta Hill and surrounding areas. Promote good governance and hold the concerned City officials, the DENR and other government officials and agencies accountable for their decisions and wrongdoings.
4. Conduct public consultations as a standard operating procedure and ensure that the free prior and informed consent of affected communities is obtained before any development program or project is implemented in the city. Declare moratorium on large-scale development in the city.

5. Promote clean and green development, environmental education programs in the schools and communities, indigenous knowledge and practices in natural resource management, and grassroots involvement in environmental management. Promote sustainable urban agriculture.
6. Revive and strengthen the consumerism movement in Baguio City for people to become responsible for the things they buy and use and for each of us to take into our lifestyles and responsibility in the use of our resources.
7. Ensure equitable allocation and distribution of water resources and take measures to protect the water quality in the City of Baguio.

Consider urban planning in a wider-scale such as the Baguio-La Trinidad-Itogon-Sablan-Tuba (BLISTT) framework for development, as a way to ease the increasing pressure on the carrying capacity of Baguio, while giving a proper place to pro-people development, environmental sustainability and indigenous heritage values of the people of Baguio and the adjacent municipalities.

These recommendations come with the guidance of the words of Macliing Dulag, the Kalinga leader who was killed on April 24, 1980 for his militant opposition to the construction of the Chico Dams. He said: "What is the most precious thing to man? Life! If life is threatened, what ought a man do? Fight! This he must do, otherwise he is dishonored. That will be worse than death. If we do not fight and the dams push through, we die anyway. If we fight, we die honorably. Thus I exhort you all then "KAYAW! (Struggle!)"

Done in observance of Earth Day (April 22) and Cordillera Day (April 24), on this 22nd day of April 2012 in UP Baguio, Baguio City.

Annex 2: Statement of the Baguio Citizens' No Waste Initiative

On August 29, 2012, one hundred concerned Baguio citizens assembled in UP Baguio to attend the Workshop on Baguio Garbage, organized by Tebtebba, ORNUS - Tongtongan ti Umili, CWEARC, and the Cordillera Studies Center of UP Baguio. As a result, participants to this workshop agreed to converge and launch the Baguio Citizens' No Waste Initiative.

We are Baguio residents from all walks of life, including barangay officials, the church sector, the urban poor, those affected by the Irisan trashslide, the academe, and representatives of non-government organizations and people's organizations. Our experiences with the uncollected garbage and the trashslide at the Irisan dumpsite, which claimed the lives of six people last year, have made us realize the magnitude of the garbage problem in the city. Poorly managed waste has an enormous impact on our health, the local environment, including contamination of water resources and air pollution, and also on the global environment in terms of greenhouse gas emissions.

While it is the city government that is tasked to solve this problem, we believe that citizens' participation is a necessary ingredient for successful and sustainable waste management in the city. We aim to build citizen participation in waste management policy development and programs. We have agreed among ourselves to do our share, and do what we can to ease the garbage crisis by drastically reducing to a minimum the waste that we generate, and by exerting efforts and contributing our knowledge and energies in engaging with government in the process of finding a long term sustainable solution to the garbage problem in the city.

In support of our brothers and sisters in Irisan, Tadiangan, and Aringay, La Union, we urge the city government to strictly comply with the terms of the recently granted Writ of Kalikasan and to cease and desist from making use of the closed Irisan dumpsite for any garbage-related activities.

We urge to the city government to review the tasks laid out in the city's 10 year Ecological Solid Waste Management Plan, and to persist in its efforts to identify a site for a sanitary landfill for final disposal of the city's residual waste; to explore all possible sites within the BLISTT; and to appeal to our neighbors and offer mutually beneficial terms for their consideration.

We appeal to the city government to exert due diligence in appraising technological solutions, like Waste to Energy, and the impacts on the environment; to learn the lessons from our experience with Protech's ERS and La Trinidad's experience with Black Hole technology; and to hold sway in their management of the garbage problem and not to hand over their responsibility to a foreign corporation, like Dominion Clean Energy. We demand that the city government be open and above board in all dealings with corporate interests, in relation to waste management, and to subject these contracts and transactions, to scrutiny by the public.

Many of us are not fully informed of current policies and guidelines on segregation and collection of our trash. We advise the city government to place greater emphasis on information and education of Baguio residents on their responsibilities in waste management, and to tap the schools, parishes, non-government and peoples' organizations, and members of civil society in this campaign to reach all Baguio citizens.

We are willing to match government efforts by doing our share and initiating waste reduction and management measures in our own homes and places of work, and in carrying out our own IEC efforts in our communities. In fact, there are presently many ongoing initiatives by residents and local groups to step up recycling and reducing waste in their localities. Barangay level initiatives are effective, as seen in the case of Guisad Central Barangay, which has enacted and is implementing a no plastics ordinance. We urge city government to recognize and give full support to local initiatives, and to allocate necessary budget for setting up infrastructure for barangay MRFs and for barangay level IEC.

We want to send the message that the government is not alone in solving this problem and that many of us are ready and willing to get involved in the challenging task of solving our garbage problem.

Agreed upon by 100 participants to the Workshop on Baguio Garbage, August 29, 2012, at the Sarmiento Hall in the University of the Philippine Baguio.

Annex 3: Writ of Kalikasan on the Irisan Dumpsite

Republic of the Philippines
Court of Appeals
 Manila

FORMER SPECIAL SIXTH DIVISION

CONGRESSMAN RONALD M. COSALAN, BENEDICTO R. CABRERA (BENCAB), BENGUET BOARD MEMBER JOHNNY D. WAGUIS, LEONARDO TAGANAS, PEDRO B. BUYAGAO, MIKE BUNNOL, ERLINDA V. SORIANO, ELISA H. MARIANO, HILARIO L. PALOS, AND VICE MAYOR ERIC O. SIBUMA OF ARINGAY, LA UNION, AND THE MEMBERS OF THE SANGGUNIANG BAYAN OF ARINGAY, LA UNION, NAMELY: CHARLIE CIRILITO C. JULOYA, BENJAMIN O. SIBUMA, EMELIO ROLAND S. YARANON, TERESITA O. GARCIA, VITO D. BALANGUE, ROMEO B. CARINO, GENOVEVA L. OBRA, VICTORIANO C. BATARIO, RAMON B. MEDRIANO AND MICHAEL FRANCIS B. SIBUMA,
Petitioners,

CA-G. R. SP NO. 00006

Members:

CARANDANG, J.
Chairperson,
 DIMAAMPAO, and
 ROSARIO, JJ.

Promulgated:

AUG 10 2012 *ginseng*
10:51 AM

- versus -

HON. BAGUIO CITY MAYOR MAURICIO G. DOMOGAN, THE CITY OF BAGUIO, HEREIN ALSO REPRESENTED BY HON.

Vice J. Bueser who inhibited, per Raffle dated 21 March 2012.

CA-G.R. SP NO. 00006
CONSENT DECREE

2

MAYOR MAURICIO G.
DOMOGAN, HON. DÁNIEL T.
FARINAS (AS CITY VICE MAYOR
AND PRESIDING OFFICER OF
THE SANGGUNIANG
PANLUNGSOD), SANGGUNIANG
PANLUNGSOD MEMBERS,
NAMELY: NICASIO M. ALIPING,
JR., BETTY LOURDES F.
TABANDA, ISABELO B.
COSALAN, ELMER O. DATUIN,
PETER C. FIANZA, EDISON R.
BILOG, RICHARD A. CARINO,
PERLITA L. CHAN-RONDEZ,
FRED L. BAGBAGEN, ERDOLFO
V. BALAJADIA, PHILIAN LOUISE
C. WEYGAN-ALLAN, NICASIO S.
PALAGANAS, AND JOEL A.
ALANGSAB, THE CITY SOLID
WASTE MANAGEMENT BOARD
REPRESENTED BY HON.
MAURICIO G. DOMOGAN AS
CHAIR, AND CEPMO (CITY
ENVIRONMENT & PARKS
MANAGEMENT OFFICE),
REPRESENTED BY CORDELIA
LACSAMANA, AND THE
DEPARTMENT OF
ENVIRONMENT AND NATURAL
RESOURCES (DENR),

Respondents

X-----X

CONSENT DECREE

ROSARIO, J.:

CA-G.R. SP NO. 00006
 CONSENT DECREE

3

The case before Us is a *Petition for Writ of Kalikasan and Writ of Continuing Mandamus* filed by petitioners before the Supreme Court on 15 December 2011 and docketed therein as G.R. No. 199486.

On 17 January 2012, the Honorable Supreme Court issued a resolution *en banc*, to wit:

x-x-x. Acting on the Petition for Writ of Kalikasan and Writ of Continuing Mandamus with Prayer for a Temporary Environmental Protection Order, the Court Resolved to:

(a) REQUIRE the respondents to COMMENT on the petition within ten (10) days from notice hereof;

(b) ISSUE a WRIT OF KALIKASAN and a TEMPORARY ENVIRONMENTAL PROTECTION ORDER against the respondents;

(c) REFER the case to the Court of Appeals for acceptance of the comment and return of the writ and for hearing, reception of evidence and rendition of judgment;

(d) ORDER the respondents to make a VERIFIED RETURN of the Writ of Kalikasan before the Court of Appeals within a NON-EXTENDIBLE period of ten (10) days from receipt hereof as provided in Section 8, Rule 7 of The Rules of Procedure for Environmental Cases; and

(e) ORDER the respondents to cease and desist from making use of the Irian dumpsite either as a temporary holding/staging area or as a dumping or controlled area for any and all kinds of solid waste.¹

¹ Rollo, pp. 167-168.

CA-G.R. SP NO. 00006
CONSENT DECREE

4

The petition alleges, among others, that

An ugly physical scar now mar(s) the face of the City of Baguio, the erstwhile Summer Capital of the Philippines.

As an immediate result of the disaster of the Baguio "TRASHSLIDE" of August 27, 2011, six (6) persons, three (3) of whom were minors, were buried alive. Numerous houses were swept away and destroyed, with their owners rendered homeless. Garbage, waste and its toxic by-products and derivatives, as well as polluted water and other objects, were strewn upon public thoroughfares, river and waterways, water sources and supplies and also into inhabited houses;

But the tragedy of the TRASHSLIDE cuts deeper than the cruel physical scar that continues to the present day to be visible to the naked eye. There is a clear, present and continuing danger to the constitutional and statutory rights of the petitioners and other citizens and residents in the City of Baguio, Province of Benguet and Province of La Union to "a balanced and healthful ecology."

There is also a need to immediately address and seek redress against the continuing ecological threat, danger and prejudice to them and the generations that would come after them in a manner that is "simplified, speedy and inexpensive;

It can never be said that the tragedy of August 27, 2011 was an "Act of God" that was unexpected or unavoidable. It was a predictable disaster that was waiting to happen. That it would happen was a certainty. The only question was - WHEN?;

As early as March 7, 2007, former Baguio City Councilor GALO D. WEYGAN, in a letter to one of the herein respondents already warned and predicted:

CA-G.R. SP NO. 00006
 CONSENT DECREE

5

x-x-x the mountain of waste overlooking the creek below within the Asin Barangay is in IMMINENT DANGER OF ERODING OR CRUSHING DOWN ANYTIME WHEN IT IS TRIGGERED BY STRONG RAIN AND WATER or any earth movement underneath like in the case of an earthquake or underground water.

We are therefore RAISING THE WARNING OF AN IMMINENT DANGER OF ANOTHER PAYATAS THAT CAN HAPPEN IN BAGUIO which we would like to let all the officials of the city to know and to do something IMMEDIATELY to undertake all necessary mitigating measures to minimize the happening of the undesirable event which no single person can be made responsible.

x-x-x

The prophetic warning was not seriously, sincerely nor effectively heeded. Government callousness, neglect, inefficiency and insensitivity resulted in a tragedy that was so accurately predicted four (4) years before;

Something must be done now and done decisively and in a continuing, permanent and long-term manner;

It is providential that a year before the Baguio TRASHSLIDE, this Honorable Supreme Court issued A.M. No. 09-6-8-SC (The Rules of Procedure for Environmental Cases), made effective on April 29, 2010, and thus providing for a prompt and specific legal remedy for serious ecological and environmental threats and tragedies such as the subject of the case at bar;

Hence, this PETITION.²

² Rollo, pp. 4-6.

CA-G.R. SP NO. 00006.
CONSENT DECREE

6

After the submission by respondents City of Baguio and its officials of their *Comment/Return*³ on 3 February 2012; *Manifestation (in Lieu of Comment)*⁴ on 6 February 2012 by respondent Department of Environment and Natural Resources (DENR), through the Office of the Solicitor General (OSG); and DENR's *Return of the Writ*⁵ on 7 February 2012, this Court set the instant petition for preliminary conference on 23 March 2012. On said date, however, the parties filed a *Joint Motion to Reset*⁶ on the ground that the parties have prior commitments of equal importance. In a resolution⁷ dated 30 March 2012, this Court granted the motion and reset the preliminary conference to 4 May 2012, as prayed for by the parties.

During the preliminary conference on 4 May 2012, Attys. Pablito Sanidad, Sr., Francisca M. Claver and Joris-Karl Dacawi appeared for petitioners. On the other hand, Atty. James Lee Cundangan of the Office of the Solicitor General (OSG) entered his appearance as counsel for respondents, together with Atty. Roel Vincent Castro, who represented the DENR, and Attys. Melchor Carlos R. Rabanes and Isagani S. Liporada for the City of Baguio. Respondents manifested that they are not opposing the issuance of the Writ of Kalikasan and given their inclination to explore the possibility of settlement, the parties agreed to reset the preliminary conference to 4 June 2012 for the submission of a compromise

³ Id., pp. 447-486.

⁴ Id., pp. 172-175.

⁵ Id., pp. 178-201.

⁶ Id., pp. 1288-1289.

⁷ Id., p. 1292.

CA-G.R. SP NO. 00006
 CONSENT DECREE

7

agreement. In the same manner, the hearing on 4 June 2012 was reset, by agreement of the parties, in view of the on-going negotiations for settlement between them.

Before Us now is the *Joint Motion for Rendition of Consent Decree*⁸ filed on 18 June 2012, informing this Court that the parties have committed and agreed to settle the instant case amicably and thereon seek rendition of a Consent Decree pursuant to Rule 3, Sec. 5,⁹ and Rule 1, Sec. 4(b)¹⁰ of the Rules of Procedure for Environmental Cases,¹¹ upon the amicable settlement reached by hem.

⁸ Rollo, p. 1316

⁹ Sec. 5. Pre-trial conference; consent decree. - The judge shall put the parties and their counsel under oath, and they shall remain under oath in all pre-trial conferences.

The judge shall exert best efforts to persuade the parties to arrive at a settlement of the dispute. The judge may issue a consent decree approving the agreement between the parties in accordance with law, morals, public order and public policy to protect the right of the people to a balanced and healthful ecology.

x-x-x

¹⁰ Sec. 4. Definition of Terms. -

(a) x-x-x

(b) *Consent decree* refers to a judicially approved settlement between concerned parties based on public interest and public policy to protect and preserve the environment.

¹¹ A.M. No. 09-6-8-SC, the objectives of which are:

SEC. 3. Objectives. - The objectives of these Rules are:

- (a) To protect and advance the constitutional right of the people to a balanced and healthful ecology;
- (b) To provide a simplified, speedy and inexpensive procedure for the enforcement of environmental rights and duties recognized under the Constitution, existing laws, rules and regulations, and international agreements;
- (c) To introduce and adopt innovations and best practices ensuring the effective enforcement of remedies and redress for violation of environmental laws; and
- (d) To enable the courts to monitor and exact compliance with orders and judgments in environmental cases.

CA-G.R. SP NO. 00006
CONSENT DECREE

8

Finding the terms and conditions embodied in the amicable settlement submitted by the parties to be in accordance with law, morals, public order and public policy, and in order to protect the right of the people to a balanced and healthful ecology, the *Joint Motion for Rendition of Consent Decree* is hereby **GRANTED**, and the terms and conditions therein embodied, mutually agreed upon by the parties, **APPROVED**.

ACCORDINGLY, it is hereby **ADJUDGED, ORDERED AND DECREED**, as follows:

A.

**GRANT OF THE PRIVILEGE OF THE WRIT OF
KALIKASAN**

I. The privilege of the writ of kalikasan is hereby **GRANTED**. The **Temporary Environmental Protection Order (TEPO)** issued by the Honorable Supreme Court on January 17, 2012 in G.R. No. 199486 is now **DISSOLVED** and in lieu thereof, a **Writ of Continuing Mandamus** is hereby issued, **DIRECTING** as follows:

1. That the Irisan Dumpsite at Barangay Irisan, Baguio City shall be perpetually and permanently closed. The City Government of Baguio, the respondents and all

CA-G.R. SP.NO. 00006
CONSENT DECREE

9

those who may hereafter succeed them shall heretofore cease and desist from utilizing the same as an open or controlled dumpsite, or as a holding and/or staging area and/or for any kind of garbage-related activity;

2. That the City of Baguio, its officials, and all those who may succeed them shall immediately implement their announced plan to convert and establish the area of the Irian Dumpsite as an environment-friendly Eco-Park and to cease and desist or refrain from any and all activities that shall hamper, defeat or contradict said purpose;

3. That the City of Baguio, its officials, and all those who may hereafter succeed them shall abide by the local government's declaration of closure of the facility and thereafter, implement and establish at the soonest possible time, a waste disposal system at a remote location which shall not be where the closed Irian facility is situated consonant with the provisions of Republic Act No. 9003, particularly but not limited to Secs. 17 (h), 40, 41 and 42 thereof; and, in the interim, adopt all measures that shall ensure a clean, sanitary and safe environment to the residents of the areas affected and its environs; and, to rehabilitate, clean and vegetate the area and the mountain slopes to avoid any untoward incidents;

CA-G.R. SP NO. 00006
CONSENT DECREE

10

4. Notwithstanding the foregoing, the City Government of Baguio shall be allowed to:

a. Implement a rehabilitation plan¹² subject to approval and further modification by the concerned national government agencies for purposes of conformity with relevant environmental laws and, this Court. Implementation shall be completed within a non-extendible period of twenty (20) months from the grant of this Consent Decree. It shall be understood, however, that no further vertical extensions in the retaining wall included in the aforesaid rehabilitation plan shall be implemented for purposes of accommodating fresh garbage;

b. Transfer, maintain, and manage its **plant nursery** at the area when the circumstances permit, considering the implementation of the aforesaid rehabilitation plan; and

c. Temporarily maintain a motorpool for its empty garbage collection trucks at the space immediately fronting the entry point of the former dump facility consisting of about three thousand (3,000) square meters, more or less, for a non-extendible period of twenty (20) months from the grant of this Consent Decree;

5. That the City of Baguio and its officials and all those who may succeed them shall abide by and comply with all their duties under environmental laws, rules and regulations relevant and pertinent to the use of the closed Irisan garbage facility and to do all acts "or series of acts" as shall be necessary until further orders from this Court and the objectives of this amicable settlement shall have

¹² Annexes "1, *en seque*" to the Joint Motion for Rendition of Consent Decree.

CA-G.R. SP NO. 00006
CONSENT DECREE

11

been fully satisfied;

6. That all the respondents and all those who may succeed them shall render periodic reports to this Court on the execution of this Consent Decree based on the settlement between the parties, until the Orders contained in this Consent Decree shall have been fully satisfied;

7. The periodic reports to be submitted by the respondents shall detail their compliance with this settlement and the Consent Decree, binding the parties thereon by submitting partial returns of the writ to this Court, the first return to be submitted within six (6) months from the issuance of this Consent Decree and the following, every six (6) months thereafter until further Orders from this Court or after a finding that judgment has been fully implemented;

B.

MONITORING

II. Furthermore, the Department of Environment and Natural Resources (DENR), all its attached bureaus and agencies and all such other government entities necessarily involved in securing,

CA-G.R. SP NO. 00006
CONSENT DECREE

12

protecting and preserving the environment, are hereby **ORDERED**:

1. to strictly monitor compliance by all concerned with this Consent Decree;

2. to be more proactive, aggressive, and decisive in the implementation of the laws intended to protect the environment such as, but not limited to, Republic Act No. 9003 (The Solid Waste Management Act), Republic Act No. 8749 (The Philippine Clean Air Act); and Republic Act No. 9275 (The Clean Water Act) and not just to limit itself to the issuance of occasional updates, reports, reminders and/or warnings; and

3. to monitor the covenants herewith entered and to submit a monitoring report within three (3) months from the issuance of this Consent Decree and every six (6) months thereafter until further orders from this Court or after a finding that judgment has been fully implemented.

C.

WAIVERS

III. The parties waive any and all claims that they have alleged against each other in their pleadings and by

CA-G.R. SP NO. 00006
CONSENT DECREE

13

reason of the filing of the instant petition.

SO ORDERED.

ORIGINAL SIGNER
RICARDO R. ROSARIO
Associate Justice

WE CONCUR:

ORIGINAL SIGNER
ROSMARI D. CARANDANG
Associate Justice

ORIGINAL SIGNER
JAPAR B. DIMAAMPAO
Associate Justice

CERTIFICATION

Pursuant to Article VIII, Section 13 of the Constitution, it is hereby certified that the conclusions in the above decision were reached in consultation before the case was assigned to the writer of the opinion of the Court.

ORIGINAL SIGNED
ROSMARI D. CARANDANG
Chairperson, Former Special 6th Division

RRR/acn

RECEIVED TRUE COPY
[Signature]
for **Rosario Rhea Mae E. Binabang**
Division Clerk of Court
COURT OF APPEALS

About the Author

Maria Lorena C. Cariño earned her Masters in Urban and Regional Planning from the University of the Philippines School of Urban and Regional Planning in 2010. She is presently working as a Social Development Consultant for the Central and West Asia Department of the Asian Development Bank.



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