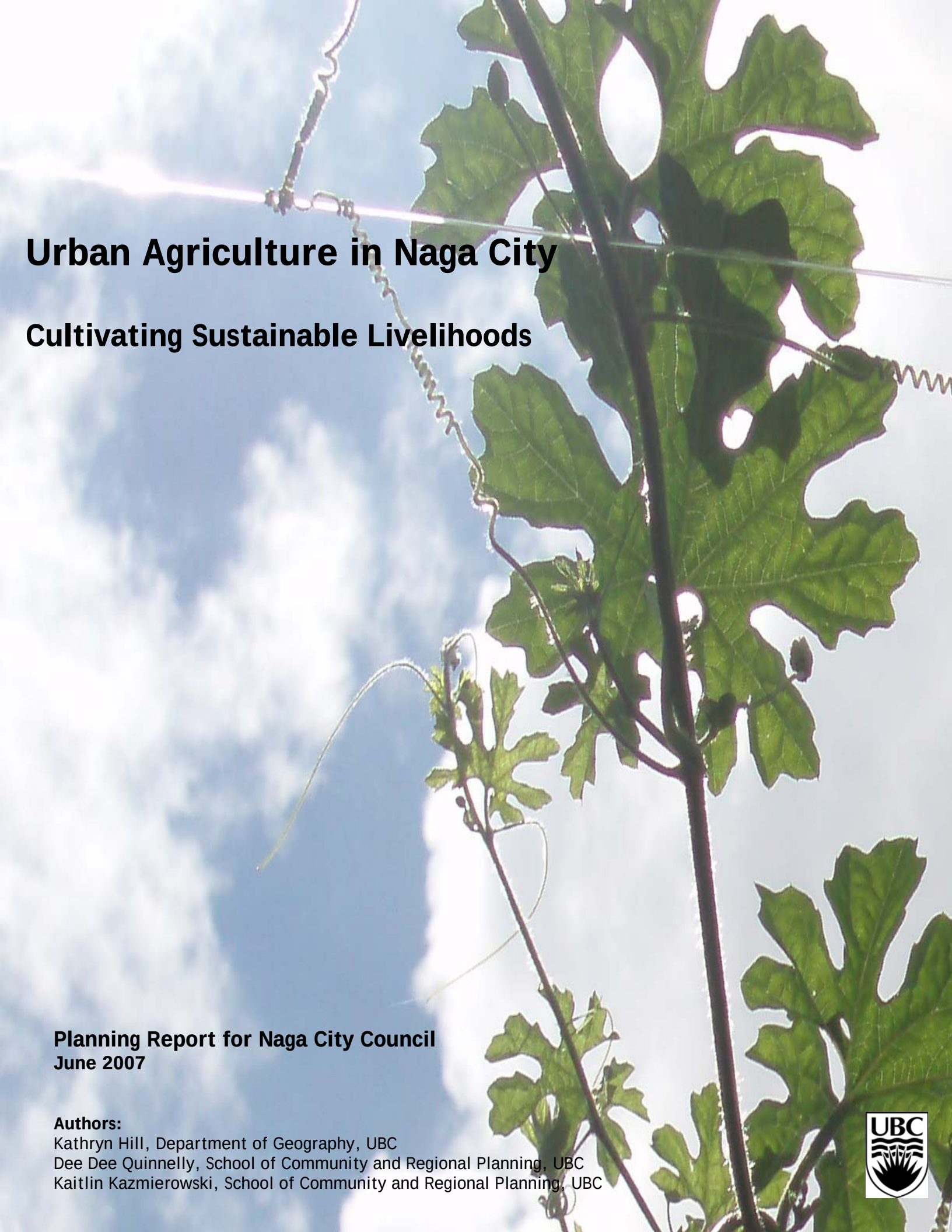

Urban Agriculture in Naga City

Cultivating Sustainable Livelihoods

Planning Report for Naga City Council
June 2007

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PREFACE

The report you are about to read was written by MA-level graduate students and submitted to the Naga City Government and relevant stakeholder groups to partially fulfill the requirements in PLAN 548H – Planning Studio Course in Participatory Planning and Governance. This was a graduate program course offered at the School of Community and Regional Planning (SCARP) at the University of British Columbia (UBC), Vancouver, Canada and conducted in the summer of 2007 in Naga City. The course offering was a first in many ways. It was the first field studio course at SCARP offered in the Philippines. The course description, outline and schedule of activities were developed with Naga City Planning Division, other City officials, and the Ateneo de Naga Centre for Local Governance. It also benefited from students' feedback and assessment of initial interests. The topics of the final group report assignments were decided after the first class meeting with Naga City Mayor, Hon. Jesse Robredo, who outlined his City's strategic planning priorities and his hopes of what the UBC students can do as he puts it, in helping "reinvent City governance."

Why a Studio Course in Participatory Planning and Governance?

Professional planners-in-training need exposure and experience in the challenges that face many developing countries. The transnational flows of people, ideas, services, movements and goods around the world make those challenges almost universal in character, if not in dimension and scale. Planning is inextricably and organically linked with governance. Planning practices depend much on political institutions, guiding policies, procedural rules and programs that are shaped by governance practices and cultures. A studio course design optimizes the learning and teaching of lessons derived from the real world of planning-governance nexus. Hence, the course was designed to be experiential, dialogic, interactive, and community-based. It was structured as a mutual learning experiment for students and the Naga City planners, officials, and residents.

Thus, the course general learning objectives for the twenty Canadian and international graduate students were to:

- Understand and appreciate the real world of planning challenges in a developing country;
- Provide meaningful inputs to Naga City planning processes and implementation plans;
- Create a new generation of planners who bring in their thoughtful analytical skills into creative and practical solutions.
- Bring lessons from Naga City and the Philippines as a whole to places, sites and cultures in their future planning work.

More specifically, the students were expected to be able to:

- Provide sustainable, low-cost and effective recommendations to promote good change in Naga City;
- Demonstrate and apply their interdisciplinary planning skills in local governance issues;
- Write thoughtful and well-researched planning reports that Naga City officials and staff, as well as community groups, can use in their current and future work.

Why a Studio Course in Naga City?

Naga is a mid-size city of 150,000 residents in Bicol region, central Philippines. It is internationally and nationally renowned as among the "best practices" in good local governance in the Philippines and in the developing world. Naga City has maximized the opportunities for governance reform, local capacity building, and improved delivery of basic services created by

political decentralization under the Local Government Code. Since 1988, Naga City has been creating and implementing various mechanisms to involve local organized groups, particularly from the marginalized sectors of society, in governing the city. Its City Government has been working closely with highly functional People's Council and various other Councils, Committees, Special Bodies, and Task Forces to deal with local governance issues – from social housing for the poor to creating sustainable social enterprises, from addressing school board governance to using new information communication technologies in creating closer relations between the people and the city government. This long history of public engagement and capable leadership continuity make Naga City an ideal and productive laboratory for examining the promises and challenges of democratizing planning in a rapidly growing and complex city environment.

Caveats and Constraints

The following is one of six Planning Reports submitted to the City Government. The six reports are:

(1) Quality Universal Public Education
(2) Youth Development Planning
(3) Urban Agriculture
(4) Investment Promotion
(5) Transportation, and
(6) Social Housing for the Urban Poor

Each of these reports were developed in close consultation with the course instructor and the relevant City Officials, as the students went about framing their research questions, identifying their data needs, doing interviews, leading focus groups, collecting and analyzing data, and writing the final drafts that served as bases of the students' public presentations to the City on June 6 and 7. As there are some groups that have more members than others, and as each of the groups went about developing its own methodological and analytical frameworks suited to their topics, it is expected that there will be some variations and diversity in their final outputs. The research and writing that went in the preparation of these reports spanned only a period of three weeks, from May 17 to June 7. More time and more consultations would have greatly improved the quantity and quality of our data and analysis. We did the best that we can under the limited circumstances, and we apologize for any mistakes, gaps in analysis, and oversights that our reports may have. We provide our insights and recommendations without any strings attaches or expectation that they will be adopted by the City

Without pre-empting the acknowledgment of each of the reports, I join my students in thanking the Naga City Government, particularly its Planning Division Director Wilfredo Prilles, Jr. and his Staff; Mayor Jesse Robredo; the Directors and Staff of the City Agriculture, City Environment and Natural Resources, City Engineers, City Health, City Tourism and City Social Welfare and Development Offices, the Local School Board members; the City Division of the Department of Education, the City Investment Board, and the Naga City People's Council. We thank all our guest speakers, guides and key informants from the above Offices; Dr Danny Gerona and Atty Sol Santos; Mr George Abonal, Principal of Ateneo de Naga High School; Fr Joel Tabora SJ, President of Ateneo de Naga University; ADNU Head Librarian Edna and Dr Malu Barcillano, her Staff and student volunteers at Ateneo Centre for Local Governance; the municipal and barangay officials of Pamplona, Camarines Sur; and the staff of the Naga City Youth Centre. We thank all Naga residents for the warm hospitality, generosity and enthusiasm they showed us. *Dios mabalos po, at mabuhay kayong lahat sa Naga!*

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University of British Columbia
Naga City, Philippines, June 7, 2007

Executive Summary

Urban agriculture (UA) is increasingly becoming recognized as a sustainable, holistic and empowering means for achieving food security and aiding in poverty alleviation. Though broadly defined as any form of agriculture taking place in urban and peri-urban areas, UA is rooted in environmentally sound practices, social justice, strong local economies and citizen empowerment.

Naga City currently sits in an interesting position with regards to local UA practices. Despite being enclosed by rich agricultural lands, encroaching development and social stigmatization of farmers pose serious threats to the future of local agriculture in the city. Local UA initiatives, while present in peri-urban areas are less visible within the city itself. This invisibility has often resulted in exclusion of small-scale UA practices from the public and political consciousness.

This project was aimed at understanding how UA could be developed and promoted in Naga City, as a viable livelihood option to enhance agricultural productivity and conserve lands critical for sustainable food security.

Mixed-method qualitative research led to the realization that Naga City possesses great potential to serve as a showcase city for innovative UA practices, simply by capitalizing on its current assets. Through greater collaboration with various stakeholders (farmers, citizens, students and community groups), city officials can undertake socio-economic and environmental assessments, listen to local recommendations and create enabling legislation that will not only increase UA lands in Naga, but actively conserve current agricultural lands under threat, promote alternative livelihoods, strengthen local economies and educate and empower all citizens. Building upon the city's solid political and agricultural foundations, UA has the potential to flourish within Naga's urban and peri-urban landscape if informed by collaborative multi-stakeholder processes and participatory policy creation.

Acknowledgements

This project would not have come together without the dedication, assistance and generosity of Willy Prilles and the Naga City Planning Office. We must also extend a huge thank you to the City Agriculture Office and especially Dr. Marissa Arroyo Galapa for her extraordinary support. You allowed our team to experience some truly wonderful moments. In addition, we would like to thank all the people who shared their time, expertise and tables with us; all the farmers, city departments, the RIC, the women's league, market vendors, barangay captains, entrepreneurs, and Jenny and Earl. Thank you for your kindness and unending generosity. Finally, we would like to acknowledge the super-human efforts of Dr. Leonora Angeles for making this all possible. Salaamat Po!

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1.0 INTRODUCTION

Urban agriculture (UA) is changing the way that people feed themselves in cities. Academics and practitioners alike are increasingly turning their attention to the current form and future potential of this activity. Broadly defined as agricultural activities (e.g. vegetable production, livestock rearing, aquaculture, and flower and ornamental gardens) in both urban and peri-urban areas (Slater 2001), urban farming has recently been touted as a critical element to achieving productivity and sustainability amidst rapid urbanization.

2.0 GOALS OF THE REPORT

Project Purpose
As one of the fastest growing economies in the Bicol region, Naga City positions itself as a centre of agricultural productivity. The pressures of urban development encroaching on vital agricultural lands create a sense of urgency for the municipality to prioritize the plans, programs and policies designed to permanently protect agricultural lands. Turning its attention to the benefits of UA is an important choice the city can make to facilitate land protection, sustain food security and foster viable livelihoods for Naguenos. As such, the following research will address:

> *How can UA be developed and promoted as a viable livelihood option to enhance agricultural productivity and conserve lands critical for sustainable food security?*

While Naga currently does not have an institutionalized UA program, it is expected that investigation will reveal key municipal assets and resources necessary to enable a successful UA program.

Identified Research Goals

- Conduct sound research contributing to the discourse of UA program development in developing countries.
- Gain an intimate knowledge of the spatial, social and political environments of Naga City.
- Develop a practical set of recommendations for Naga City to utilize in the development and implementation of a successful UA program.

3.0 METHODOLOGY

In order to address the research question as comprehensively as possible, a mixed-method approach was adopted, comprising three main elements: 1) *spatial,* 2) *social* and 3) *political*. Using multiple methods facilitates triangulation in the research, as data captured from each method will be used to test for accuracy and validity. The study, while specific to the context of Naga, is designed to be replicable with the intent of making an impact on the field of planning and development by encouraging evaluation and analysis of similar UA systems.

1. *Spatial*: land use maps and plans were consulted to understand the nature and dynamics of urban sprawl pressures on Naga's agricultural land.

2. *Social:* interviews and focus groups were conducted with farmers and market vendors to understand their attitudes towards, and experiences of UA.

   In-depth interviews and focus groups were favoured over questionnaires, due to their potential to capture rich, descriptive data, and elicit deeper meaning and understanding of respondents. In-depth interviews with farmers and market vendors were conducted mainly on a one-to-one basis, and focus groups contained approximately twenty participants, with the assistance of two translators. Data was captured in the form of note-taking and audio recording.

   Farmers were asked to discuss their experiences, needs and problems, in order to generate ideas regarding required actions and policy measures. Questions included: 1) why did you become a farmer; 2) do you enjoy farming; and 3) what problems do you face as a farmer in Naga, and 4) what could be done to address them.

3. *Political:* analysis of agricultural ordinances and land-use policies were supplemented by interviews with institutional actors to understand the significance of UA to Naga's current and future development. Questions to officials included: 1) what strategies have been deployed to assist farmers in cities; 2) what are the key constraints farmers in Naga experience; and 3) what do you think the authority should do to overcome these constraints.

By contrasting public officials' with producers' views, the team was able to highlight areas for innovation, where UA policies and mechanisms could be enhanced and promoted to more effectively respond to the needs and constraints of the city's producers and vendors.

Reviews of interviews and focus groups are attached in Appendix 1. To maintain confidentiality, research participants will remain anonymous and general job descriptions will be cited in the report.

4.0 ORGANIZATION OF THE REPORT

The following report utilizes the Conceptual Framework of the National Research, Development and Extension (RDE) Network for a UA program in the Philippines (Nitural n.d.). Unfortunately, this framework currently remains little more than that, a concept. But this presents Naga with an ideal opportunity. By applying this theory, Naga has the potential to become a showcase example of UA practices and policies in the Philippines.

While each section in the report corresponds to a recommended program component, it should be noted that the order of presentation does not necessarily dictate an order of program implementation. That is, each element of the UA program is inter-related and initiatives to create and implement components may take place simultaneously.

The specific details provided for each UA program component are based on the study team's research conducted while in Naga City. The research informed key findings that present a number of opportunities for the development, implementation and promotion of a UA program. Perhaps an initial step that must be recognized before furthering UA is a shared understanding and acceptance for the rationale to pursue such a program in Naga City. Recognizing the importance of building a case for the necessity of these components in Naga

City, rationales, based on literature reviews from an international development perspective, will introduce key findings, related best practices and innovations and recommendations generated specifically to fit the Naga City context.

5.0 BENEFITS OF URBAN AGRICULTURE

5.1 Environmental Sustainability

Since its formal inception during the 1983 Brundtland Commission, sustainability has become a well-used term applied in various fields and practices. While it was initially defined as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Hart 1998), sustainability's role has since deepened and broadened as it has become more ingrained in daily life. Sustainable development is built upon the three pillars of social equity, economic growth and environmental protection. In order for sustainability to be achieved, there must be equal balance between these three pillars, thus ensuring a holistic and balanced approach in its implementation (www.ciria.org 2007). Figure 1 below outlines the balance between the social, economic and environmental supports of sustainable development.

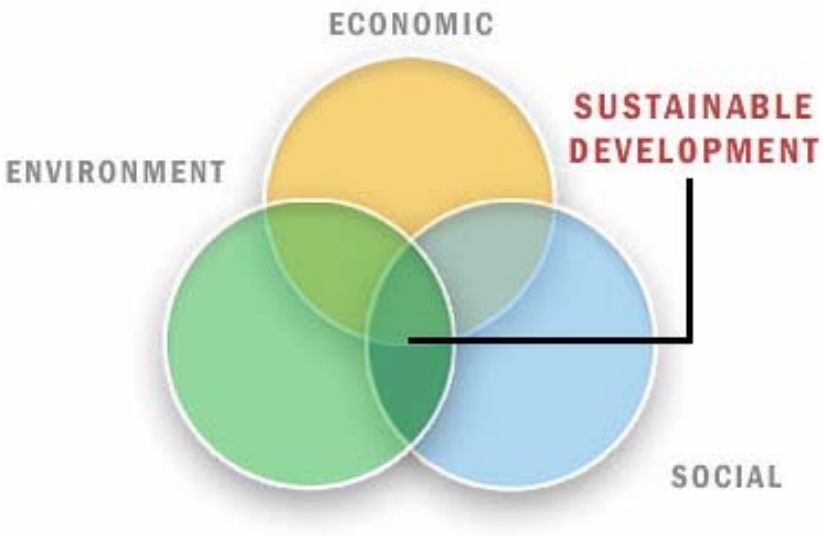


Figure 1: Sustainability Model.

In terms of sustainable agriculture, the same need for balance between the three pillars is key in insuring a holistic relationship exists between food producers, consumers and the supporting environment. A sustainable approach to agriculture allows producers to diversify production to meet their economic and cultural needs as well as those of the populations they support, while remaining stewards of the land from which they derive their livelihoods (Allen et al 2003). Sustainable agriculture also entails an element of empowerment as it emphasizes a deliberate care and responsibility for the health of the environment and thus for the consumers (or "food citizens") who are direct participants in a sustainable food system

(Levkoe 2006). Agriculture and subsequent food chains can directly benefit from sustainable practices while serving as examples of the benefits and successes of a holistic and participatory approach to food.

Research suggests that UA's contribution to urban food supply and household urban food security is significant and, in many instances, growing. In countries such as Zimbabwe, Cuba, Kenya, Uganda and Haiti, where households practising UA have been compared with poor non-practising households, the former have been found to have lower food insecurity, eat more meals, maintain a more balanced diet year-round, and use their savings to buy other food items that would otherwise be unaffordable (Mougeot 2005).

Definition of food security: "that food is available at all times; that all persons have means of access to it; that it is nutritionally adequate in terms of quantity, quality, and variety; and that it is acceptable within the given culture" (Mougeot 2006:80).

Previous research in Africa also suggests that a small category of entrepreneurs can emerge through UA, where financing programs are made accessible to them (Gabel 2005). By growing their food, producers can save considerable money because they have to purchase less food. Selling some of the harvest may generate income that can subsequently be used to meet other basic needs, such as schooling. Incomes and wages from UA tend to compare favourably with those of unskilled construction workers (Mougeot 2005). UA has also been used to employ youths, ex-convicts and homeless and other "at risk" populations. With fair access to resources and services, UA can be an integral component of income and employment strategies, while also building more self-reliant local food supply systems.

5.2 Millennium Development Goals (MDGs)

Urban farming has been identified by the United Nations as a key strategy towards meeting the Millennium Development Goals:

MDGs	UA Contribution
1. Eradicate extreme poverty and hunger	• Generation of income through sale of agricultural products • Employment of "at risk" populations • Reduction of food purchases • Increased food security and nutrition levels
2. Promote gender equality and empower women	• Creation and strengthening of women's networks • Generation of income • Flexible livelihood strategy, allowing women to juggle multiple roles in subsistence, production and environmental management • Social and financial independence

3. Ensure environmental sustainability	• Beautification of city through production of trees, flowers and ornamental plants • Reduction of erosion • Absorption of air pollution and odours • Recycling of solid wastes and grey water

5.3 Growth Management

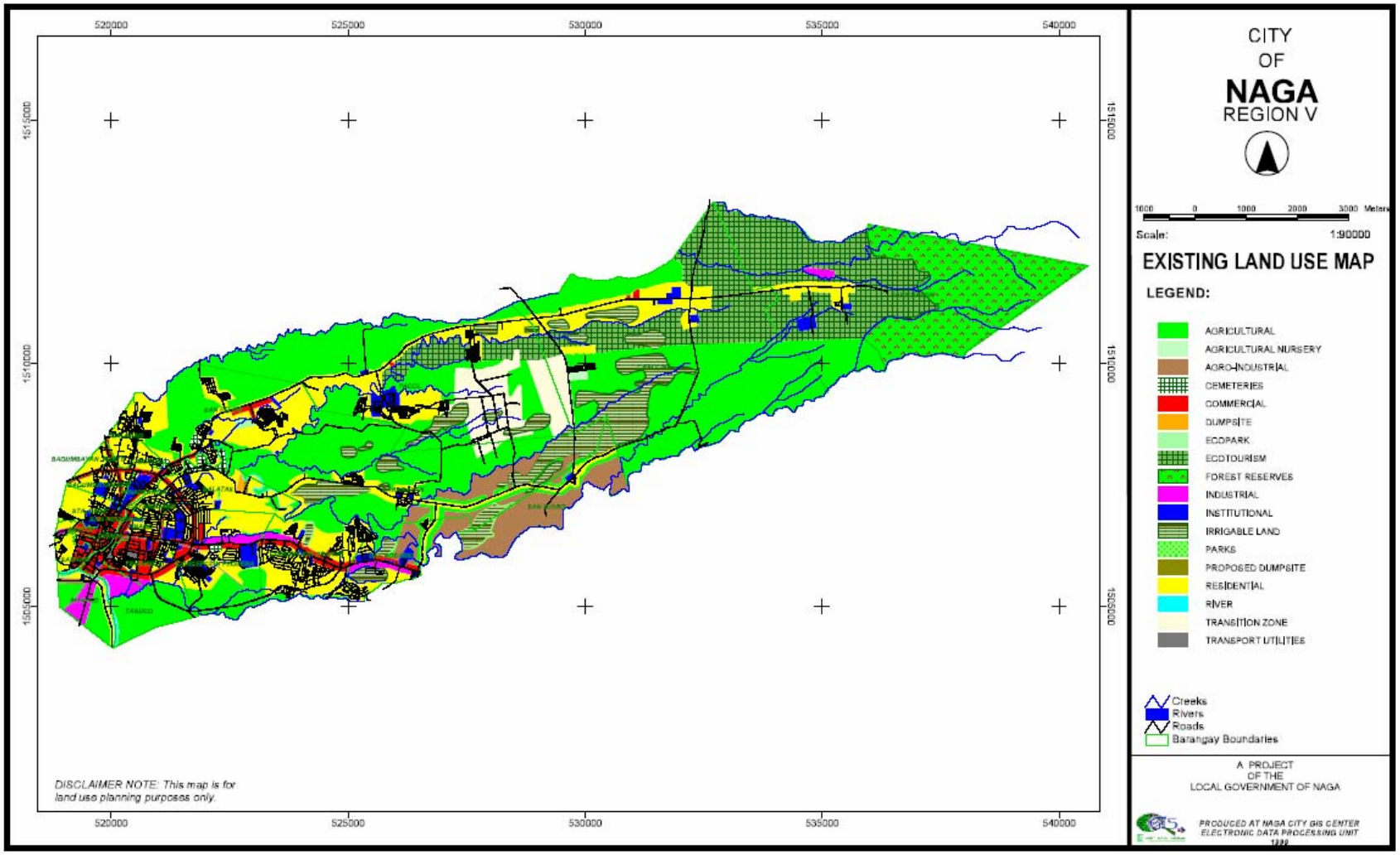
An identified strength of UA lies in its ability to link cities and their environments (Mougeot 2005). As such, UA is an increasingly affordable and effective tool for sustainable growth management (Mougeot 2005). Local governments play an important role in safeguarding the environment of areas under their jurisdiction through powers to formulate their own plans and by-laws (Spies 2000). At this local level strategic planning and programming of vacant or idle lands suitable for UA will promote a certain level of protection and food security. However, a strategic UA plan cannot stand alone. It must be fully supported through policy statements and enabling legislation. For example, lands designated for UA should have separate development regulations and bylaws to guide how the land can be protected from future development.

6.0 BACKGROUND: AGRICULTURE IN NAGA CITY

- *65.78% of Naga's total land area is devoted to agriculture*
- *Rice, sugarcane, coconut and corn are the main crops grown*
- *Natural disasters, limited financial means, high production costs and intensive land conversion constrain Naga's agricultural development*
- *Improving agricultural productivity was identified as a top priority in this year's annual report.*

Source: Naga City Comprehensive Land Use Plan (CLUP) 2000

With just under two-thirds of its total land area dedicated to agricultural purposes, Naga remains primarily agricultural (CLUP 2000). Good soil conditions and flat terrain allow for increased agricultural productivity rates in Naga. Akin to the rest of Bicol, the major staple crops grown in the city are rice, coconut, sugarcane and corn; although a flourishing swine-raising industry has also developed of late. Agricultural activity is concentrated in 11 of the city's 27 barangays (San Felipe, Pacol, San Isidro, Carayan, Carolina, Balatas, Conception Pequena, Del Rosario, Concepcion Grande, Mabolo and Panicuason), located east of the city proper (see Map 1).



Map 1: Land use map of Naga City, illustrating the predominance of agricultural lands. Source: CLUP (2000).

	Strengths – S	Weaknesses - W
	• Soil types and generally flat terrain good for diversified farming • Presence of agricultural support facilities, i.e., irrigation, hydro-dams, abattoir • Medium and small-scale poultry and livestock industry • Naga with predominant agricultural land use	• Lack/unimproved farm-to-market roads • Unimproved farming and livestock techniques
Opportunities – O	**SO – Strategies**	**WO – Strategies**
• Agricultural support services • Possible sourcing of funds from Sen. Roco, Rep. Jacob and Usec Dy-Prieto • Available agriculture sector support • Irrigation projects underway • Assistance from sister cities/DA • Available financing institutions • Trading Centre • Responsive political leaders to agricultural development	• Agricultural Development through strengthening of agri-extension services and prioritization of on-going land reform programs • Intensify and diversify crop production within the existing prime agricultural lands • Increase farm and livestock production by protecting key agricultural areas from land conversion and promotion of production boosting methods	• Provision of irrigation system/facilities, skills upgrading of farmers and agricultural technicians • Prioritize improvement of farm-to-market roads • Hire professional managers to manage farmers organizations • Encourage farmers to undertake open alternative ways
Threats – T	**ST – Strategies**	**WT – Strategies**
• Occurrence of La Niña • Possible lack of support from national government • Lack of coordination from DPWH and other government agencies • Top soil deterioration due to erosion during rainy season • Financial constraints • Industrial pollution • Weather condition • High Cost of Production • Lack of support for CARP beneficiaries	• Encourage participation of government as well as private sectors in the provision of support facilities to meet future agricultural demands, prevent pollution and top soil deterioration • Organize small farmers in order to pool resources to buy equipment	• Provide additional farm-to-market roads and improve/repair existing farm-to-market road • Minimize unwarranted land conversion to ensure continuity of local food supply

Table 1: SWOT matrix of the agriculture sector in 1999. Source: CLUP (2000).

However, natural disasters, financial constraints and high production costs continue to inhibit Naga's agricultural sector from achieving its potential. Moreover, high land conversion rates have further put at risk Naga's ability to ensure food security and improve farmers' livelihoods. In 1999 alone, a total of 1,660 hectares of agricultural lands were converted in Naga (CLUP 2000). Conserving land for agricultural production has thus been identified as a top priority. Faced with these constraints, the City Agriculture Office (CAgO) has dedicated itself to promoting intensified agricultural production.

The CAgO has outlined the following objectives to meet this need (CLUP 2000):

1. To provide technical assistance to farmers via improved crop production technology, with emphasis on low cost production techniques

2. To increase the production of grains (rice and corn) and other food crops within the key production areas
3. To enhance the productivity and increase farm incomes through a diversified livelihoods approach
4. To promote organic farming techniques to increase agricultural sustainability.

Focusing primarily on the city's agricultural barangays, the CAgO has invested resources in the rehabilitation of farm-to-market roads, irrigation networks, and technological developments, particularly high yielding varieties (see Table 1). But much more remains to be done. Rising food demands, together with decreasing incomes in agricultural areas, require further interventions in the agricultural sector. So great has this need become, that improving agricultural productivity has been outlined as one of the top priorities of the next electoral term (State of the City Report 2007).

7.0 URBAN AGRICULTURE AND POLICY MECHANISMS: CONCEPTUAL FRAMEWORK

Studies conducted worldwide emphasise the significant influence that public policy has on the performance of UA systems. With inadequate political assistance and means, urban households often have to practice illegally, on marginal and often hazardous sites, posing risks to their own health, that of their family and consumers (Mougeot 2005). However, with supportive policy mechanisms, farming can thrive within municipal boundaries, impacting positively on the alleviation of poverty and food supply, environment and land use and women's empowerment.

Local authorities can play a key role in enabling and regulating UA, among others by (Mougeot 2005):

- Stimulating the dialogue and cooperation among the direct and indirect stakeholders in UA.
- Reviewing and revising existing municipal by-laws and regulations regarding UA.
- Integrating UA into municipal development plans and sector policies.
- Securing access to land and enhancing the security of user rights of urban farmers, among others by urban land use planning and zonification, provision of land, and the promotion of multi-functional land use.
- Promoting safe re-use of urban organic wastes and wastewater in agriculture.
- Stimulating enhanced support to processes of technological innovation in UA and promoting ecological farming practices.
- Facilitating local marketing of fresh, urban-produced food.

The National Research, Development and Extension (RDE) Network for UA Programs (under the auspices of the Department of Agriculture) has already played an active role in enhancing and implementing urban farming in the Philippines. Their Conceptual Framework is shown in Figure 2 below (Nitural n.d.).

The components of the program are as follows:

1. Agricultural Research and Development

1.1. Benchmark Socio-Economic Studies

1.2. Biotechnology and Varietal Improvements

1.3. Cultural Management

1.4. Pest Management

The development of management strategies against common pests and diseases affecting crops and livestock. It also includes strategies to prevent the occurrence of pathogens in an urban setting.

1.5. Postharvesting/Processing

Studies on processing/packaging of plant and animal products to prolong their shelf life and add value to products.

1.6. Waste Management

Composting and treatment of agricultural and household wastes, recycling of water for irrigation purposes, and wastewater treatment

1.7. Agricultural Engineering

The design of space-saving planting platforms, efficient rainfall-supplied drip irrigation/fertilisation systems etc

2. Organization, Training and Extension

2.1 Institutional and Human Resource and Development

Manpower development efforts pursued to strengthen the capabilities of both program implementers and beneficiaries.

2.2 Piloting of Technologies

UA technologies generated through research will be piloted in the program areas.

2.3 Establishment of Demo Farms

Demonstration farms established in strategic locations (especially inner-city areas) to serve as showcase of UA technologies.

3. Planning and Land Use Management

3.1 Land Availability, Accessibility and Usability

The inventory of city lands to determine the current condition of land resources.

3.2 Land Use Planning and Supportive Policy Frameworks

Development and implementation of the plans, policies and regulations required to achieve recognized UA goals and objectives.

4. Market Development

4.1 Market Studies

4.2 Marketing Assistance

Provided to cooperatives to ensure the efficient marketing of produce.

5. Policy Advocacy

Policy studies conducted to study the potentials of UA as well as the issues and concerns of this activity.

6. Monitoring and Evaluation

7. Program review

Conducted annually by the Department of Agriculture to provide an external monitoring and evaluation of the program, to allow adjustments in program design, activities and timetable whenever necessary.

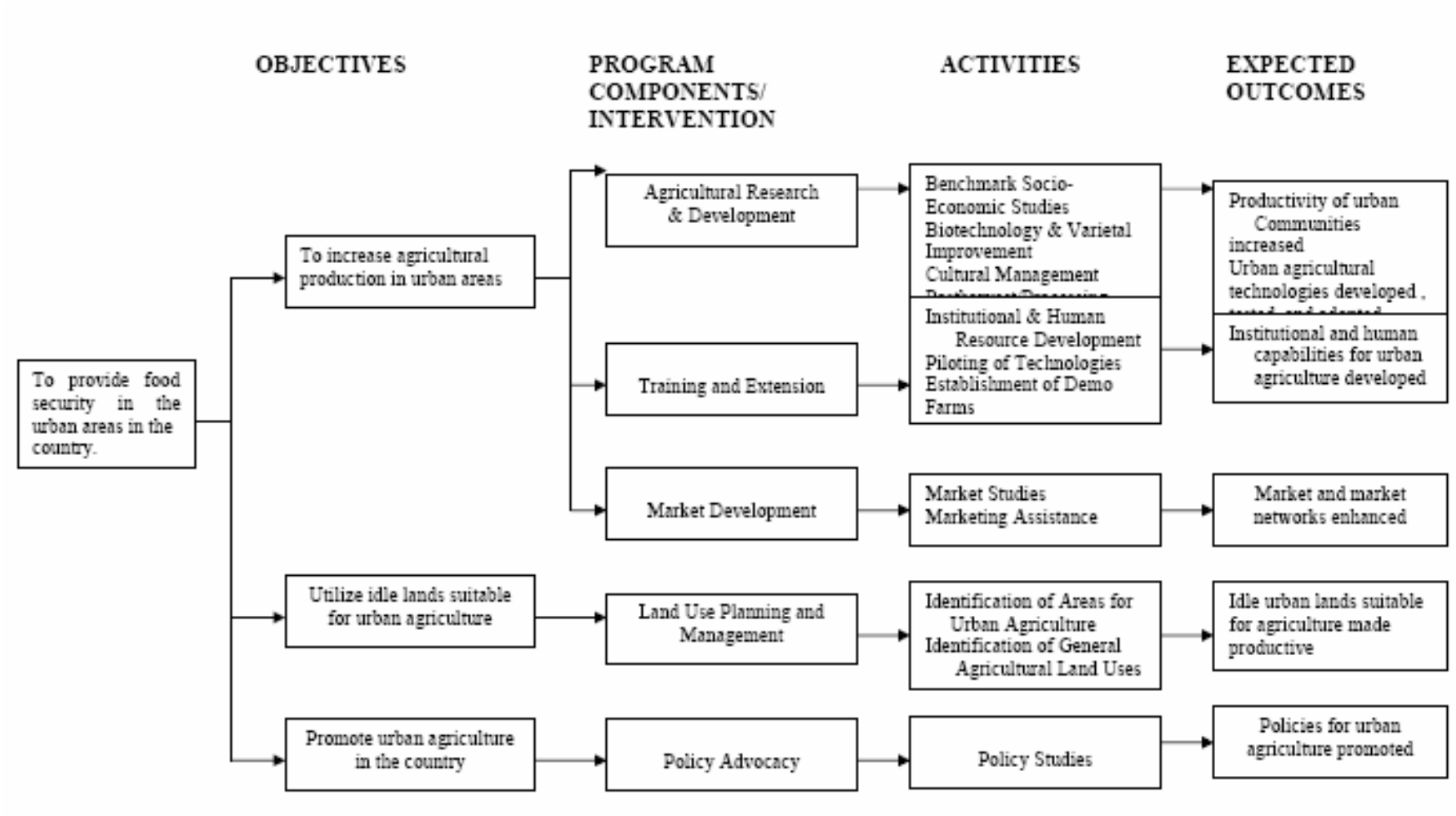


Figure 2: National Research, Development and Extension Program for UA Conceptual Framework. Source: Nitural, P. S. (n.d.)

8.0 PROPOSED STRATEGY

The following section outlines the proposed framework required to develop and strengthen Naga's UA sector, in order to enhance productivity and conserve land critical for sustainable food security. The strategy proposed is based on a review of current agricultural practices and policies in Naga, as well as case studies and innovations conducted elsewhere. Effort has been made to develop a people-centred, holistic and sustainable policy framework, which is not dependent on external supports and is resilient in the face of external shocks and stresses. The opening section considers the measures required to institutionalize UA in Naga. Thereafter, attention is paid to the particular program components of a UA strategy in Naga, following closely the conceptual framework outlined in the previous chapter.

8.1 Institutionalizing Urban Agriculture

Institutional gaps can exacerbate problems and neglect opportunities for successful UA. In most places, UA falls under the jurisdiction of several different levels and types of authorities. For instance, officials at municipal, provincial and national levels may deal with different issues, including agriculture, public works, forestry, urban planning, transportation, environment, justice, and the interior (Quon 1999). Without an agency or organization with specific responsibilities to regulate, aid, support, monitor and facilitate research on UA, it often "falls between the cracks" of typical municipal sectorally-organized government, or is subject to confused and conflicting jurisdiction (Quon 1999).

As service providers, local governments should first try to understand the issues surrounding UA and agree to a division of roles and responsibilities before developing strategies with other stakeholders (Spies 2000). **Coordination and information-sharing** at the municipal level is needed for adequate governance and **institutional capacity** to carry out effective environmental planning and management, and provide urban services, public education, and remain accountable to the public, an assertion that carries over to UA (Quon 1999).

Key Findings in Naga City
Currently Naga City offers a wide variety of programs to support certain aspects of agricultural development. The city should be proud of these accomplishments, but should recognize the opportunity and necessity to institutionalize UA, that is, to create and promote a structured and well-established UA system in the city.

Based on interviews with key city officials it was determined by the researchers that current goals and objectives for the promotion and conservation of agriculture in Naga City are fragmented. While current projects such as the City Hall demonstration garden, 4H clubs and technical assistance programs for farmers exist in Naga, it was identified that such efforts could be strengthened by creating a larger support network at the local level (i.e. through engaging municipal offices, citizens and non-governmental agencies). In other words, an **opportunity for capacity building around UA** exists in Naga City since the current agricultural programs are often administered by a single municipal office. **Foundation building**, a recommended first step in the development of Naga's UA program, is essential to identifying the roles, responsibilities and capacities of municipal offices poised to **affect change** in the current and future state of agriculture in Naga City.

Issues

- Need to Institutionalize UA.
- Need for the development of a Multi-Stakeholder Process to create a unified vision, goals and objectives for UA.
- Need for the development, implementation and promotion of a UA program.

Innovations

- UA Conferences in South Africa (Appendix 3): In March 1998, IDRC held an international UA workshop at Technikon Pretoria. The comprehensive overview of issues that affect the practice of UA reveal that a key to successful implementation of UA lies in the institutionalization of UA programs (Spies 2000).
- Development of a Multi-Stakeholder Process dealing with UA (Appendix 3): Information on the development of a MSP, including a sample inter-actor agreement for development of an baseline study and action plan on UA (van Veenhuizen 2006).

Recommendations

- **City planning staff should take a proactive role in initiating the development a Multi-Stakeholder Process designed to institutionalize UA in Naga**. Information on how this process can be initiated and implemented is provided in the Innovations Appendix section (Appendix 3).
- **Create, Implement, Manage and Promote a UA program in Naga City.** A detailed framework for UA program design is fully discussed in the text of this research paper. It is suggested that the municipality utilize the program concept that has proven successful in other regions of the Philippines (Cagayan de Oro, Appendix 2).
- **City should host information dissemination sessions via monthly UA Round Table meetings or an annual National conference on UA** (activities may be in partner with local Universities or NGOs). A sample of successful implementation of a national conference in South Africa is included in the Innovations Appendix (Appendix 2).

8.2 Agricultural Research and Development

Fundamental to any UA system is a strong research and development component. Without thorough understanding of the state of UA, misconceptions about its socio-economic and environmental importance will persist, and its potential benefits not fully realized. Technology development is equally as important, in order to ensure that intensification of both crop and animal production and processing offers maximum benefits to urban livelihoods and minimum negative impacts on the health of producer and consumer families, their neighbours and on the urban environment. Technologies include conversion of biodegradable solid wastes into humus or compost, recycling of waste water (which requires careful monitoring), integrated pest management, and use of organic or herbal pesticides (Mougeot 2005).

Key Findings in Naga

Naga has already made significant headway in collecting **baseline data** of existing **socio-economic** and **environmental conditions**. Comprehensive **farmer profiles** (detailing age, marital status, farming practices, land area etc) are collected in the city and made widely accessible to all agricultural technicians. Details of producers are only kept in paper format however, and only those in direct contact with the city are recorded.

The city has also conducted **environmental** (i.e. soil fertility, drainage systems) and **capability assessments** (i.e. fertility and productivity of land) within all of its barangays (CLUP 2000), providing useful information when deciding which parcels of land offer the most satisfactory return for resource inputs. Data about **land ownership, tenure and land resources** at the individual lots level is not yet recorded however, such that the amount and location of unused, underused and misused land remains largely unknown

In terms of **technology development**, the city has already invested considerable resources, or identified as areas for improvement, crop development (use of modern varieties), increased use of fertilizers and pesticides and crops, prepared feed and vaccines in livestock production, and improved water efficiency via irrigation (CLUP 2000). More than P1M has already been invested to provide irrigation facilities to agricultural areas in Panicuason, Carolina, Pacol and San Felipe (State of the City Report 2007). Interviews with local farmers, however, indicated that research on technical development is focused on rural farming systems and may not necessarily be applicable to the urban context. Moreover, the close connections between urban farming and waste management strategies have not fully been made, and farmers' participation in technology development is limited.

Issues

- Need to collect information on farmer profiles in all barangays, and create a suitable database
- Need to collect data on land ownership, tenure and land use (at the individual lots level) in order to understand the amount and location of vacant and unused space in the city
- Need to develop agricultural technologies more suitable to the urban setting
- Need to foster more communication between the CAgO and ENRO, particularly with regards to waste management initiatives
- Need to more heavily involve farmers in technology development

Case Studies

- GIS in Dar es Salaam (Appendix 2): Several cities have gathered and documented baseline information using GIS. In Dar es Salaam, Tanzania, GIS has been supplemented with aerial photography analysis and mapping gin the field to identify vacant lots for UA development (Dongus and Drescher 2001). In Naga, integration of GIS into UA development will be facilitated by the city's already strong IT department.
- Socioeconomic Survey in Khorogo, Côte d'Ivoire: A Tobit Approach (Appendix 2): A quantitative analysis was undertaken with the assistance of AGROPOLIS to identify the determinants of small ruminant adoption (Barry 2005). Data was collected on determining factors, and the results were analysed using the 'Empirical Tobit Model'. While focus was placed specifically on livestock adoption, the analysis could be readily transferred to crop production, aquaculture etc, and made highly applicable to the Naga context.
- Waste Management in Cagayan de Oro, Philippines (Appendix 2): Cagayan de Oro's extensive systems of allotment gardens rely heavily on compost made from biodegradable waste, and have illustrated explicitly the need to integrate a solid waste management component into UA.

Innovations

- Technology Development (PTD) approach to urban horticulture in Kampala, Uganda (Appendix 3): In Kampala, local authorities have tapped into urban producers' horticultural knowledge to develop planting systems optimizing vertical space (Prain 2006). The PTD approach involved three main steps: 1) focus groups and workshops with local farmers to outline agricultural skills, knowledge and farming techniques; 2) a formal survey of farming practices similar to that outlined above, which was complimented with laboratory analysis of samples; and 3) farmer-led experimentation. A PTD approach to UA is highly applicable in Naga, due to the city's well established participatory governance culture.

Recommendations

- **A community assessment of existing UA conditions** should be undertaken to develop an organized and strategic UA plan. A long-term goal of the assessment is to develop and maintain a data collection and storage system that will provide information necessary to guide the monitoring and evaluation of UA plan. Specific tasks in the assessment include:
    - identification of all vacant, undeveloped, idle lands in Naga (ownership of these land should be indicated during data collection)
    - soil suitability/environmental assessment of all lands
    - identification of current and future food system/security, and population levels
    - review of farming practices, farmer profiles and programs. These assessments should be attentive to gender dimensions of attitudes and actions, and should be inserted into a database to improve efficiency and data analysis.

  It is our inclination that creating this level of organization will position Naga City as a strong competitor for international funding. Databases could even include grants applied for, or how programs are currently being funded/supported.
- **The community assessment data should be inserted into a database and integrated with GIS, to improve efficiency and data analysis.** This will be facilitated by the city's already strong IT capacity, but may also require external research assistance.
- **Greater collaboration with local (CSAC, BU), national (DA) and international (AGROPOLIS, IDRC, RUAF) research institutions** to gain additional technical support (socio-economic assessments and surveys could become a research thesis or class project).
- **Involvement of farmers in all stages (innovation, experimentation, implementation) of technology development (PTD approach). Partnerships with research institutions** to gain additional technical support (socio-economic assessments and surveys could become a research thesis or class project) (Appendix 3).
- **Development of technology specific to the urban context** (i.e. container gardening techniques). This activity already takes place informally in many of Naga's barangays (see Photo 1 below), but could be extended by strengthening seed networks and providing practical training courses at marginal cost.
- **Closer integration of waste management into UA programs**, involving technologies of composting or co-composting at the household of community scale, and the large-scale collection and preparation of restaurant and other food residues for animal feed. It is recommended that the city adopt a system similar to that in other Philippines cities (Cagayan de Oro, Appendix 2).

Photo 1: Container gardening in Lerme barangay.

8.3 Education, Training and Extension: Urban Agriculture Program to Ensure Sustainability

UA has been regarded as both an extremely progressive and regressive activity with regards to socio-economic development and environmental stewardship. Through its various definitions, UA has been touted as a coping strategy during times of economic crisis (Southworth 2006), an innovative means of creating sustainable local economies (Levkoe 2006), a cultural activity which can empower marginalized peoples (Allen, et al 2003) and an illegal practice which jeopardizes human health, pollutes cities and creates nuisances (Quon 1999; Slater 2001).

Though political attitudes towards the activity became more favourable in the 1980s (Mougeot 2005), the association of UA with a failing development process continues to make its mark on many contemporary political agendas. The preoccupation with advocating UA and representing it in terms of its monetary benefits has resulted in a paradigm that is narrowly defined, economistic and utilitarian in its perception of the activity's benefits (Slater 2001). Policy makers have often relied upon quantitative techniques that more easily demonstrate the economic outcomes of UA, and have aggregated data, thus masking the differential opportunities and constraints of different urban farmers. According to Mougeot (2005), UA policies have tended to focus on large, public projects, and involved limited stakeholder consultation.

Currently, perceptions surrounding UA continue to be rather conflicted; a feeling which has manifested itself in the relationships between the key stakeholders within the UA framework: the farmers, the public, the politicians and the planners (Quon 1999). These often tense relationships are a product of many misconceptions and knowledge gaps between these key

players. Negative and deep-rooted cultural perceptions can hinder UA initiatives creating venues for mistrust and shame, thus impeding mutually beneficial UA partnerships (Quon 1999). It is for this reason that education must play a key role in the development, implementation, acceptance and practice of UA activities. Only through education and understanding can all stakeholders in UA begin to truly work together to enable accepted and community driven sustainable agriculture in urban landscapes, while changing perceptions and empowering one another.

1.2 Education Contexts

While its role is vital in the promotion and implementation of UA practices, education takes place in various realms and at different levels. Since UA is a holistic activity, education surrounding its practices and components must also be holistic and include all players. UA education must encompass physical skills and farming practices as well as social and political education in order to **democratize food systems** and allow all participants to become **active members in all aspects of food production**, processing and distribution (Levkoe 2006). The following sub-sections describe and analyze the various education contexts of UA by employing a combination of literature reviews, research findings and case studies. The informed recommendations are also included in this section.

1.2.1 Educating the Farmers

The education of farmers must take place in both the physical and political realm, as the success of UA initiatives depends as much upon sustainable agriculture skills and **environmentally sound practices** as it does **upon political and legal know-how** (Quon 1999). In order for UA to become widely accepted as an official land-use, farmers must develop exemplary sustainable agriculture skills to "sell it" to the rest of the public, the government and local planners (Quon 1999). However, the missing link of political/ legislative education must also be addressed in order to enable farmers to assert their interests in the political realm so that enabling policies can be created based upon their knowledge and expertise (Quon 1999). Not only will this allow farmers to exert a sense of ownership over UA, but it will empower them to continue to participate, make change, learn and influence their local food systems, while changing perceptions regarding agriculture and the people who practice it. Levkoe (2006) deems this type of situation as an example of "food democracy", where active participation in a food system is increased through education, and fueled by increasing confidence in one's own knowledge.

Key Findings in Naga City
Farmer education in Naga and Metro Naga appears to come from various sources. While some farmer skills are derived from traditional means, others commented on attending workshop and free seminars. Many of these seminars, however, are sponsored by large agri-business companies (i.e. Monsanto), requiring farmers to buy their products in exchange for free education; thus becoming dependent on them. The **negative social stigma attached to farming** is perhaps one of the greatest challenges to UA in Naga City. There is a general sense of low self confidence among farmers in Naga. Most would rather their children become "professionals" (doctors, businessmen) rather than farmers.

While the CAgO promotes various technology and education extension services, there is little documentation of such programs, and the means for promoting these services is unclear, as it seems to be based on word of mouth. **Farmers are under increasing pressure to increase**

production at all costs. This pressure often results in a gradual abandonment of traditional chemical-free practices in favor of chemically-based methods. The CAgO promotes organic methods, but the study findings illustrated a lack of understanding among farmers about health effects of pesticide- and chemical-use.

In addition, most farmers are tenant workers, whose livelihoods rest upon landowners' decisions. Barangay captains and groups such as the RIC, 4-H Club and local growers associations facilitate communication between local government and producers, but farmers have limited **access to information regarding the legalities and policies surrounding UA in Naga City**. The most common problem stated among all farmers is **lack of funds**. There is also an emphasis on the economic benefits of larger UA projects, yet little recognition for smaller endeavours.

Key Issues

- Lack of farmer education and awareness of environmental sustainability issues.
- Need for capacity-building and empowerment among farming community.
- Lack of understanding among producers regarding legal and policy information.
- Lack of funds for small farmers.

Case Studies

- Farmer consultation in Kampala, Rosario, Dar es Salaam and Governador Valaderes (Appendix 2). In all of the chosen examples, local policy has been developed in consultation with local farmers. Participatory policy-making capitalizes on local knowledge and empowers practitioners.
- Free Farming Schools and Workshops in Rosario and Governador Valadares (Appendix 2). Local farmers are provided with hands-on learning through product and practice demonstrations, access to communal gardens etc

Recommendations

- **Create a database of farmer profiles and farming practices**, to assess who is farming, where and at what scale, to create more relevant policy mechanisms and foster collaborative action and increased communication.
- **Make use of farmer skills and knowledge to build capacity and empower.** Naga's farmers already exhibit a wealth of agricultural knowledge, which can be easily accessed.
- **Further promotion of chemical-free UA methods for a holistic and sustainable practice,** through holistic workshops and education days at local farms. The CAgO should collaborate with the ENRO to educate farmers about the benefits of organic farming methods, and the need to remain independent of large agri-businesses.

1.2.2 Educating the Public

UA has the ability to change the way citizens perceive their food, as it can be a highly visible practice whose presence in a community can spark interest and educate local residents (Deelstra and Girardet 2001). This type of learning is important in fostering the previously mentioned **"food democracy"** concept. UA can contribute to both individual and collective learning as it can be accomplished through personal interactions between local producers and consumers, or through collective experiences via workshops and social movements (Levkoe 2006). Public education focusing on UA also seeks to redefine the consumer as a **"food citizen",** thus personalizing local food systems and strengthening the bonds of understanding

between all members of the food production chain (Levkoe 2006). The public often fails to recognize the significant influence it can exert over food systems (via boycotts, protests, etc), however this power must be informed before it can be used to create change (Campbell 2004).

Public education, however, must go one step further, as it occurs at multiple levels and scales. One exists within the education system itself. Clugston and Calder (1999) state that sustainable development is rooted in education and capacity building of all peoples with regards to environment and development issues. Elementary and high schools can serve as excellent venues for agricultural education, be it through the curriculum, school gardens, farm-to-school nutritional programs, and/or various community events (Selfa and Quazi 2005). Colleges and universities can serve similar purposes, while making use of additional resources in order to participate in community out-reach and education (Allen et al 2003).

Key Findings in Naga City

Similar to farmers' perceptions, **farming activities are stigmatized** by Naga's citizens. The negative stigma remains in the public consciousness as farming skills do not appear to be valued, and farming is not considered as honorable an activity as those of "professionals". There was little mention of the various social and environmental benefits of sustainable UA. The need for economic productivity was continually emphasized.

While agriculture is starting to be integrated in certain school's curriculum, and some school gardens have already been established, there is little shared learning between local universities, schools, farmers, and the public in Naga. The demonstration garden behind City Hall is tended by students, but public education on agricultural practices remains minimal.

Some owners of vacant land in Naga City have donated lands for UA purposes, but there appears no formal or institutionalized mechanism to enable this.

Key Issues

- UA's contribution to Naga's development is viewed in largely economistic terms by all stakeholders.
- Lack of agricultural education in schools.
- Lack of land owner education regarding UA as an alternative land-use.
- Lack of understanding between farmers and the public.
- Lack of public control over the food system.

Case Studies

- Public Education through the Stop Project, Toronto (Appendix 3). This project operates community garden space and teaching gardens for children, establishes student farms on university and college campuses and provides free public education via drop-ins and workshops. These programs educate future consumers and ensure that farming and sustainable UA practices will be valued by future generations. The Stop's creation of curriculum links has begun to fill this gap in education, and the City of Toronto's Children's Garden Program serves as a venue for class trips and hands-on learning. The Stop also encourages members of the public to become food citizens by actively participating in local food production and thus democratizing food and agriculture systems.

Recommendations

- **Link UA to other issues in the public realm via workshops, media and festivals.** Creating venues for public education regarding the important links between UA, the environment, health, education and the economy can take place via collaborative workshops, drop-in information sessions, UA training sessions with local farmers and street festivals. "Wellness Festivals" could bring all UA stakeholders together to share in locally grown foods, workshops and demonstrations.
- **Increase connection between farms and schools,** through school nutrition programs, further promotion of school gardens, creation of hands-on learning centres on local farms etc.
- **Promote locally grown products at markets** through public education and media promotion to foster pride in local UA activities. A potential brand could be entitled "Naga Natural", or "Bicol's Bounty", and could help mobilize farmer activities and increase collaboration between stakeholders.
- **Make use of Naga's Universities:** Make use of a large student population to carry out collaborative vacant land surveys, employ GIS assessments and create new venues for UA initiatives. Students at the animation school could help collaborate in creating a brand for locally produced agricultural products.
- **Collaborate with out-of-school youth.** Generated income could be put towards a scholarship fund to enable out-of-school youth to gain access to formal education.
- **Make UA highly visible in the public realm:** Using public venues (such as Plaza Rizal, Plaza Quezon and church courtyards) to demonstrates various UA techniques. Trellises can be employed to create vertical gardening spaces and container growing can be employed in almost any location. Sufficient educational information should be provided at such locations for public use. Demonstrations and workshops could take place regularly at such locations in order to promote these types of UA activities to the general public and potentially inspire the growth of small scale UA initiatives.

1.2.3 Educating the Planners

Professional planners strive to create healthy, livable and sustainable communities, and are often in unique positions to serve as **organizers, facilitators and motivators for community-lead action** (Campbell 2004). Unfortunately, there is often a disconnect between planning and food systems as they are often perceived as separate; planning pertaining to the physical/ structural realm, and food to the realms of health and rural environments (Pothukuchi and Kaufman 2000). In the past, food systems planning has focused on the transportation of goods, and the zoning of supermarkets and other commercial locations, yet has failed to address the various social and environmental issues that arise when sustainable agricultural systems and food security are considered (Pothukuchi and Kaufman 2000).

Recently however, there has been a movement towards food planning as an integral part of both the academic and practical realms of the practice. Drawing upon aspects of Ebenezer Howard's "Garden City", planners have begun to reconnect producers and consumers via comprehensive data gathering, enabling zoning regulations, organizing various groups to perform community food assessments and facilitating the formation of relationships between groups which would have never collaborated in the past (Campbell, 2004). Planners, however, must remain open to constantly informing their own skills and education regarding UA and sustainable agricultural practices in order to serve as effective facilitators and agents of change with political and social frameworks (Campbell 2004). Quon (1999) suggests that

planners must abandon preconceived notions regarding UA by taking guidance from the people, and thus fostering the creation of locally acceptable ad effective UA policies. Increasing collaboration between planning schools and community UA initiatives is also considered as an excellent means of staying in tune with UA practitioners and ameliorating food planning skills (Pothukuchi and Kaufmann 2000).

Key Findings in Naga City
While the planning department was sympathetic to the needs of farmers, they were also aware of the need to create enabling circumstances for more progressive agricultural reforms. An emphasis on the need to institutionalize agriculture via enabling ordinance and zoning was expressed. The role of UA in social mobilization was not recognized, but a strong emphasis on economic viability was expressed. **Currently, it appears that UA is under-developed in Naga City, and that there is a disconnect between farmers, planners and enabling policies.**

Key issues
- Lack of knowledge among planners about the preferences and perceptions of those practicing and affected by UA.
- Need for more interdepartmental communication, understanding and collaboration.
- Need for multi-stakeholder communication, understanding and collaboration.
- Lack of a formalized plan for UA promotion in Naga.

Case Studies
- Multi-stakeholder collaboration in Rosario, Dar es Salaam and Governor Valadares (Appendix 3), was facilitated by interdisciplinary conferences organized by city planners. A guide to multi-stakeholder collaboration around UA is also provided in Appendix 3.

Recommendations
- **City planners must promote interdepartmental links** (i.e. education, health, agriculture and environment offices) through informal meetings, or more formalized interdepartmental workshops and collaborative planning sessions.
- **Planners should tap into local knowledge bases,** by conducting site visits, facilitating public discussions and community food assessments, and organizing UA training events.
- **Integrate food planning and food policy issues into future planning school instruction and current planning practices.** For instance, professional development days could be held at local universities, and a credit system employed to ensure that city planners attend a certain number per year.

1.2.4 Educating the Politicians

The need for UA education to take place in the political realm is significant as this is the main venue for policy creation and regulation enforcement. **If a local government encourages environmentally sustainable practices, creative means of diversifying farming activities for increased income generation and local food production chains, farmers tend to respond in a positive way** by adhering to such policies and employing them as a means strengthen their UA activities and the local economy (Vandermeulen et al 2006). The key objective is to ensure that politicians and policy makers have **various means of learning**

about UA practices in order to create the enabling legislation and remain in-touch with farmers, citizens and planners alike.

Key Findings in Naga City

When asked about the prospects for developing UA in Naga City, officials responded positively. They noted the significance of UA to economic activity, and mentioned its contribution to food security. They also emphasized the urgent need to preserve peri-urban agricultural land from urban encroachment. Nevertheless, important silences were also noted in the discourses of city officials during interviews or meetings. Few noted the role of UA as a social empowerment strategy, as well as its impact on environmental protection. While the significance of large UA endeavours (i.e. demonstration gardens) was also acknowledged, the development of smaller, more informal UA efforts remained overlooked. **Officials also tended to have a somewhat vague understanding of farmers' experiences and attitude**s. When asked about the issues and constraints faced by farmers in Naga, respondents either denied the existence of constraints, or simply noted the lack of capital. It appears that UA is not yet a prevalent issue among officials, which may correspond to exclusionary effects on the part of small-scale farmers.

Key Issues

- Lack of communication regarding programs and services for farmers.
- Disconnect in goals and perceptions between politicians and local farmers.

Case Studies and Innovations

- Agricultural conferences and community assessments undertaken by local politicians in Governador Valadares and Rosario (Appendix 2).
- Creation of incentives for landowners to convert vacant lands for UA purposes in Governador Valadares, through property tax easements (Appendix 2). It also allowed urban farmers on communal plots to access municipal water for free.
- Promotion of context-specific crop development in Kampala City (Appendix 2): The government promoted the growth of crops which complement life styles, such as mushroom farming and chicken rearing for women. It also ensured that all available information was written in versions of the local language for increased accessibility.

Recommendations

- **Politicians must participate in interdepartmental workshops and Professional Development days**.
- **Utilize gathered data for action.**
- **Utilize knowledge of existing policies to enable UA.** Policy language is often confusing and inaccessible. Politicians should inform the public of any policies which currently enable UA, or advertise incentives which would promote the increased use of vacant land for UA initiatives.

Education, Training and Extension: Umbrella Recommendations

- **Listen, Learn, Collaborate:** UA is a holistic practice which requires the participation of many stakeholders. These can learn from each other through workshops, training sessions and collaborative hands-on activities. Making use of various skills can empower and inspire the people who practice them, thus increasing a sense of community pride, self-confidence and belonging.

- **Gather and document data in a comprehensive manner:** A comprehensive database must be maintained in order to ensure that UA is fostered and strengthened. Many international funding agencies require such databases in order to consider funding applications.

8.4 Marketing and Financial Assistance

Financial and marketing support can make a fundamental difference to poor urban farmers, increasing incomes and fostering entrepreneurship. Financing UA is much broader than just the provision of credit to farmers. It includes formal loans, tax incentives, subsidies, investment in technologies and infrastructure, cooperative formulation and savings schemes (Mougeot 2005). Moreover, in addition to supporting producers, mechanisms to support micro-enterprises, food processing and marketing, must also be implemented. While political support for UA has been steadily increasing, however, financial support for urban growers has been more limited. Nevertheless, important lessons can be drawn from rural micro-finance programs, and pioneering UA practices in several cities, which the following section will build upon.

Key Findings in Naga City
The study team's research suggested **strong political representation** for small-scale farmers and vendors in Naga through Agricultural Committees, the Market Vendors' Association and Chamber of Commerce.

The local authority has also succeeded in developing an extensive system of **point-of-sale outlets**, from the public market to the decentralised system of satellite markets and small stores. More specialised venues (i.e. Livestock Auction Market) have been developed to cater for a variety of needs, and wide accessibility to outlets is guaranteed by flexible rates and long opening hours.

Significant steps have been taken to rehabilitate the city's **farm-to-market roads** and **irrigation facilities** and **networks**. These have generally had a positive impact on producers' and vendors' livelihoods, facilitating business activities and guaranteeing longer growing seasons. However, **infrequent transport services** means that many producers are unable to take advantage of the improvements.

Numerous producers have also benefited from the city's **seed** and **livestock dispersal programs**. **Lack of access to credit** was identified as the largest constraint facing Naga's farmers. This often results in farmer dependence upon loan sharks, rented machinery and/or child labour. **Limited marketing assistance** was also highlighted as a barrier facing Naga's agricultural producers and vendors. Combined with poor transport facilities and time constraints, it often ensured their **reliance on middlemen,** guaranteeing more reliable, but ultimately less profitable, sales.

Producers' difficulty in generating income seemed to be perpetuated by a **lack of alternative livelihood strategies**. Some of the farmers interviewed were employed as carpenters and construction workers during the low season, but many described extended periods of inactivity.

Interviews with city officials suggested an emphasis on **export-oriented agricultural policies**, leading to rural crop choices and distribution networks that are leaving urban markets under-

supplied. Finally, the study revealed that dispersion of financial and marketing strategies to producers varies geographically within the municipal boundary. The producers further from the urban core seem to benefit less from public schemes than those in central areas, making them reliant upon training seminars and resources provided by private companies.

Issues

- Need to improve transport services, so that producers can benefit from the city's rehabilitated road networks
- Need to improve access to credit to farmers and vendors, to reduce their dependence on loan sharks, child labour and/or hired equipment
- Need to offer more marketing assistance to farmers and agricultural vendors, to increase profits, ensure financial stability, and reduce reliance on middlemen
- Need to develop alternative livelihood strategies, as many farmers are inactive during the low season, particularly in the upper barangays
- Need to extend geographical coverage of marketing and financial programmes

Case Studies

- Business Management Schemes in Hubli-Dharwad, India (Appendix 3): To create new options for the poor to access markets, the Hubli-Dharwad government focused on capacity-building through the MOVE (Market Oriented Value Enhancement) program. Under MOVE, a small group of poor landless peri-urban women were trained in the basics of setting up and running micro enterprises, and were encouraged to form cooperatives, in order to share risks and labor.

Innovations

- Normin Veggies marketing strategies, Philippines (Appendix 3). In northern Philippines, farmers of Normin Veggies have reduced their vulnerability to market fluctuations by forming an association of marketing clusters, based on farmers' capability, interest and capitalization (Concepion et al 2006).
- Agro-tourism initiatives have proved a successful income-generating activity in many peri-urban areas of Southeast Asia, such as Chiang Mai, northern Thailand. Here, the local authority has promoted agro-tourism through private-public partnerships (www.tourismthailand.se). Agro-tourism centres have been established, offering traditional accommodation, farm tours, cookery classes, agricultural classes etc.

Recommendations

- **Transport services should be improved**
- **An association of marketing clusters** should be established, similar to that in northern Philippines (Appendix 3).
- **Producers should be given better access to business management and marketing training courses**. This could build upon the knowledge, skills and facilities of Metro PESO, and should focus on more dislocated farming families.
- **The critical contribution of women to farming household economic should be strengthened**, and their horizons widened through SME development training and more focused loan schemes.
- **Emphasis should be placed on providing training for alternative job opportunities**, with a focus on higher level skills such as computing, mechanics and electricity. Agro-tourist enterprises could be another source of investment and job creation in more remote communities.

- **Appropriate financing schemes should be provided**, based on the type of UA system. The socio-economic survey mentioned previously should offer understanding of the different types of UA in Naga, in order to aid selection of appropriate financing mechanisms. Evolving credit schemes may be particularly effective in Naga. An introduction to evolving credit schemes is detailed in Appendix 3.
- **Cooperative should be promoted and strengthened**, with the support of NGOs and local banking institutions.
- **Tax incentives, price supports and fixed contracts with state distribution chains should be implemented to encourage more localised food systems.** Farmer groups, for instance, could work with local agencies to obtain fixed preferential contracts for school-lunch programs, hospitals, cafeterias etc.

8.5 Managing Growth: Land Use Planning and Supportive Policy Frameworks for Implementation

The practice of farming in cities faces both inadvertent and deliberately-imposed constraints, specifically related to land (Quon 1999). Practicing planners play a key role in **identifying strategies for development** of the lands in their communities (Campbell 2004). In that regard, city planners should pro-actively create **strategic land-use and development plans to promote UA** (Campbell 2004). It is important to recognize that even the most creative UA plans will not translate into action on their own. Successful implementation of UA plans requires the **policy framework and enabling legislation** designed to realize stated UA goals.

Urban planners can **facilitate and support UA** through effective community land use planning. These constraints can be linked directly or indirectly to planning and management interventions in urban and peri-urban areas, and consequently fall within the jurisdiction of urban planners and managers (Quon 1999). To reconcile the needs posed by urban growth with the needs for activities of high economic and social value, UA should be included in urban development plans and regulated by municipalities (Cabannes and Debbeling 2003).

The following section provides a **strategic approach** to the development of a land management component of Naga's future UA program. Before creating comprehensive land use and growth management plans, the city must intimately understand the condition of its jurisdictional lands in terms availability, accessibility and usability. This data will inform decisions planners make regarding the specific use and management of city lands. Once a comprehensive plan for land use has been formulated, the planner must **turn the plan into action**. This requires the planner to be proactive in the development of **policies and regulations** that implement the goals and objectives of the UA plan.

8.5.1 Land Availability, Accessibility and Usability

Before urban planners can effectively develop plans for land use management, other issues and opportunities regarding land must be recognized. Land is a crucial factor for many UA horticultural and cropping activities (Quon 1999). Issues of availability, access and usability are seen as critical to the contributions land may be able to make to UA security and to the livelihood composition of the urban poor (Quon 1999).

AVAILABILITY

A major challenge to the viability of UA is land availability. UA is influenced by rapidly changing land rights, uses, and values (FAO n.d.). High population densities give rise to competition and conflicts over land and natural resources through conversion of land from agricultural to residential and business uses, and agricultural intensification on the scarce spaces available for cultivation (FAO n.d.)

ACCESSABILITY

Access to land is one of the most, if not the most, significant constraint to urban farmers (Quon 1999). Therefore, it is important to distinguish access to land from the availability of land. Land may be available or present in a city but not accessible to farmers because of **political or social constraints** to its use or redistribution (Quon1999). Looming over many urban farmers, both men and women, is the constant threat of losing access to their plot and being forced to stop production activities, therefore substantial UA investments often occur on very insecure holdings (FAO n.d.).

Inequitable land distribution systems, ingrained resistance to farming in cities, or planning policies and legislation that make UA an illegal land use can all prevent farmers' access to land (Quon 1999). In some communities, discrimination based on gender may prevent equal access by women and men to land, credit or financing opportunities. There may be socio-cultural restrictions on who can own or use land, and different kinds of land tenures available. Land access may be further constrained by missing or inaccurate records of who uses or has the right to use particular plots (Quon 1999).

USABILITY

The inherent qualities of a plot of land, and the facilities and services available to it, determine whether parcels of land that are otherwise both available and accessible can be used for farming (Quon 1999). A plot's biophysical characteristics (soil, hydrology or microclimate), or physical dimensions (size, shape, location) may make it unfit for agriculture (Quon 1999). A plot may be available to farmers only for a short amount of time, therefore constraining what kinds of agricultural activities can occur on the site, and what technologies might be applicable to the site. Services, such as water for irrigation, and inputs or market facilities, transportation infrastructure both for export and for farmers' access are external factors that can determine a plot's usability (Quon 1999). Agriculture in urban areas suffers greater ecological and economic pressures than rural agriculture, requiring more intensive and better controlled production to stay competitive and safe (Quon 1999). Without inputs or technology, farming small urban spaces may simply not be economical or worthwhile (Quon 1999).

Key Findings in Naga City

At a glance, Naga City appears to have no shortage in **vacant or undeveloped land** supply (see Photo 2). However, deeper analysis of the land situation in Naga reveals that the city is not exempt from issues surrounding land in terms of: availability, accessibility and usability.

Photo 2: Idle land in Naga City's CBD 1. The land was used as a community garden, before the private landowner's priorities shifted.

Based on a review of the CLUP (2000), there are no stated goals, objectives or recommendations related to permanent protection of AG lands. The plan clearly states that city lands have been converted to other uses, but does not address a long-term solution to prevent future conversion or loss of prime AG lands:

> At present, the total existing agricultural area is 5,709.05 hectares. However, some **areas can be converted to other uses based on the proposed land use plan** of the city. It can be noted that in 1998 total agricultural area was 6,325.28 hectares as shown in Table 2.70 on page 73. As compared to 1999 data, a decrease of 616.23 hectares in use can be seen; this is because of its conversion to other uses (CLUP, 2000).

Such observations made by the city imply that **land availability issues** should be at the center of current and **future land use planning** and development discussions. It should be mentioned that recognition of such land issues as related to the land use plan are timely due to a current update of the 2000 plan being undertaken by the city planning staff for 2007 completion.

Land issues identified in the CLUP (2000) prompted the research team to undertake an investigation of the policies and regulations in place to guide land use. In particular, *City of Naga - Ordinance No. 97-06-50* prescribes the policies, conditions and guidelines for the reclassification of AG lands (City of Naga 1997). It was determined by the researchers that the ordinance's specification that DAR (AG) classified lands may not be reclassified from AG to another use is a positive step towards **AG land protection**. However, it was also recognized that an opportunity exists to enhance the ideas and concepts of such land protection.

Similarly, City of Naga – Ordinance NO. 2006-035, an ordinance recently adopted by the city, may complicate permanent protection of AG lands. The ordinance encourages the **utilization of vacant lands** for purposes to benefit the economic growth and development of the city. Without specific UA land use designation, the concern is that idle lands suitable for UA may struggle to compete with other uses viewed by the city as key economic generators, i.e. commercial or residential uses. Recognizing the many benefits of UA, the city must be more proactive and strategic in protecting lands suitable for UA ensure food security and sustainable development.

Issues

- Need to establish a mechanism (plans, policies, regulations) to protect AG lands from development
- Current CLUP identifies the rate of land conversion from AG to other uses, but does not identify AG land protection as a stated goal or objective
- Current ordinances may facilitate the conversion of AG lands to other uses

Recommendations

- Once the idle, vacant lands suitable for UA in Naga City have been identified, those lands owned by the municipality should be given **top priority for UA classification**
- In the case where the lands are privately owned, a different strategy to procure or protect the land is recommended. Several identified options available to the city are:
    - Purchasing the lands from the owner
    - Defining land taxation and **tax exemptions**
    - Private, group and **cooperative land ownership**
    - Municipal education and outreach programs to engage private land owners in community UA efforts
- **Municipal Councils or Chambers should approve a series of access laws and regulations together with land use plans** (Cabannes and Debbeling 2003). This should be an initial step to create a legal framework that facilitates UA (Cabannes and Debbeling 2003).
- **Land and spaces under cultivation (including bodies of water) should be registered.** GIS should be used for registration purposes, for improving land use monitoring and evaluation activities and as a basis for a transparent taxation system (Cabannes and Debbeling 2003). See Dar es Salaam case study (Appendix 2).
- **Transfer land titles should be issued for temporary use.** A key element of a facilitating framework is to allow access to lands suitable for UA or to bodies of water (for fish farming) under land tenure arrangements (Cabannes and Debbeling 2003). While land tenure does not mean automatic land ownership, it is beneficial in that it encourages producers to invest and modernize (first cultivation, etc.) (Cabannes and Debbeling 2003). Guarantees of land tenure rights can take the form of "leases" for institutional and public spaces, renewable for 8- to 10-year periods. Issuing of land titles also provides the government with a clear mandate for changing land use according to urban and public needs (Cabannes and Debbeling 2003).

8.5.2 Land use planning, policy and regulations: the integration of Urban Agriculture into urban planning

Distinct policies and planning efforts are needed for the management of agriculture, horticulture, forestry and fisheries in the urban and peri-urban environments (FAO n.d.). Through implementation of **strategic land use plans**, urban planners can effectively **restrict urban sprawl** by directing city growth towards the urban core (i.e. the city grows upwards versus expanding outwards). Implementation of such **effective growth management** facilitates the protection of peri-urban agricultural zones within its margins.

Planners implement municipal land use plans using various planning tools, or **"plan-implementing programs"** (Mougeot 2005), which "act as an interface between the policies of the plan and the aims of those who make decisions that transform the physical environment" (Mougeot 2005). Because private land owners have certain rights in the use of their own land, planners most often use **indirect measures** to achieve a desired pattern of land use in areas predominated by private land, permitting some things and forbidding others (Mougeot 2005). Such indirect tools are: land-use controls over private land, such as **zoning and zoning by-laws**, supported by urban land databases and urban baseline studies (Mougeot 2005).

Most municipalities either have city development structure plans, strategic plans or city development strategies, but most of these plans fail to take UA into account. The policy instrument that can be used to achieve the objective of integrating UA into urban land use planning is urban land use zoning (Takawira and Shingirayi 2006).

Furthermore, municipalities have the power to specify or formulate development policies through by-laws. As **policy-making bodies**, municipalities determine and shape the process of development at the local level. It is therefore within the ambit of municipalities to promote or prohibit UA (van Veenhuizen 2006).

While planners primarily use indirect, regulatory measures to develop a desired land use pattern in areas where urban land is most privately owned, **direct and institutional measures** merit some mention (Quon 1999). Municipalities could, for example, allow undeveloped land to be used for UA, subject to negotiation between the owner and the user. Further, municipalities have the option of promoting multifunctional land use (Quon 1999). This could be done through encouraging community participation in the management of open spaces, where food can be grown in combination with other urban functions such as recreation and city greening (Quon 1999).

Key findings in Naga

An analysis of current land use planning and management practices in Naga City reveal key findings intended to benefit the city planning staff as they undertake their CLUP 2000 plan update. The findings provided in the following section focus on land management, but specifically discuss: current lack of agricultural land designation in the city center (urban core), possible expansion of current GIS and a need to address agriculture's broad implications for planning the future of Naga.

In the CLUP (2000), the overall land use scheme presented fails to identify agriculturally productive lands in the city center, or urban core, of Naga. As seen in Map 2, all productive crop lands are designated on the peri-urban fringe and extending outwards from the city core. This land use allocation presents several key issues when compared to the growth rates and identified food security needs for a healthy, sustainable Naga. As Naga continues to grow and develop, it must proactively and strategically utilize its urban core for UA purposes. A growth management strategy that neglects food security issues will perpetuate Naga's dependency on others to meet its community food demands:

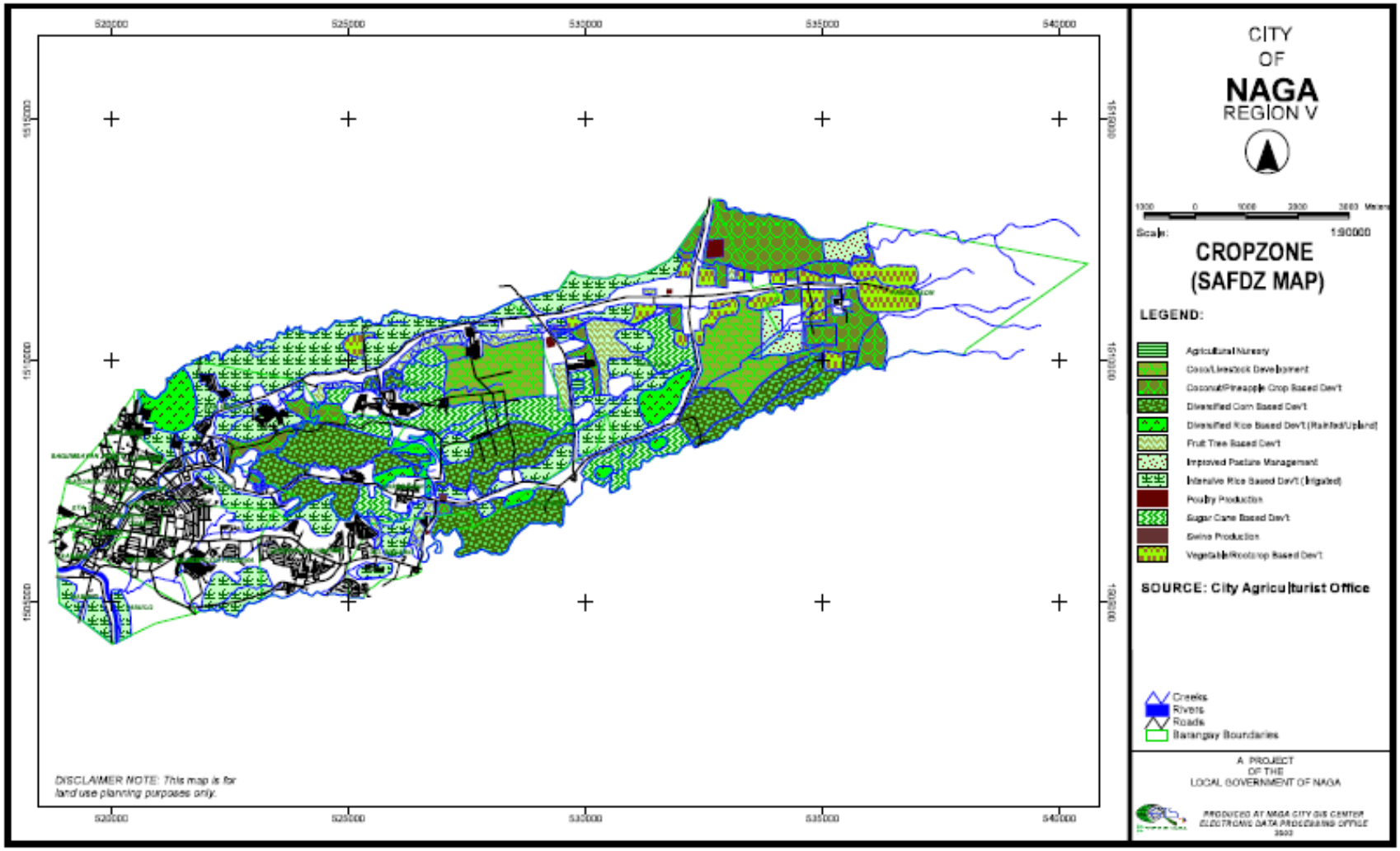
> *Our city will need more production on crops to meet the demands on food requirements for the next five (5) years. This goes to show that in addition to our own crop production, we will definitely need to import more crop produce from our neighboring agricultural towns to maintain the demand-supply gap on food requirement of our people (CLUP, 2000).*

Making strategic land use management decisions can be facilitated by expansion of the city's already existing GIS. This asset can be expanded to address the current fragmentation of spatial information (area or amount of land) and attribute information (value of land, taxation data and ownership data). This disconnect in information can complicate land analysis processes necessary to inform long term land use and management decisions.

In the CLUP (2000), the placement of agricultural land use in the economic sector is problematic. This categorization indicates that all plans, policies and enabling legislation are designed strictly from the perspective of agri-business development in the city. This perspective presents challenges to addressing Naga's identified food security needs and to Naga's overall sustainable development. Simply stated, AG issues are much broader than strictly economic development. Equally important are social and environmental implications that lack necessary attention in the CLUP (2000).

Issues

- Lack of data available to conduct assessment necessary to understand the role of UA in an overall land use scheme (e.g. a land suitability analysis)
- Need for a growth management strategy recognizing the role UA plays in effectively directing growth and development towards the city core
- Current land use plan does not designate lands for UA. A lack of specific
- Designation makes UA lands vulnerable to development
- Currently agricultural lands fall under the economic sector of the CLUP 2000. This categorization may limit agriculture's broader implications for planning



Map 2. Cropzone Map. Source: CLUP (2000).

Innovations

- Guidelines for Municipal Policymaking on UA: The Regulatory Framework (Appendix 3). UA should be included in both municipal and sub-municipal or district land use plans. It is recommended that the land use plans be strategic and the regulations necessary for implementation be included in the city's legal system. Sample guidelines for municipal policy making on UA are included in the Innovations Appendix (Appendix 3).

Recommendations

- **Creation of a municipal greenbelt with designated areas for UA** (Appendix 3). A "Naga City Greenbelt" will form an "urban growth boundary" capable of containing growth in the urban core whereby prohibiting the typical sprawling patterns of urban development. Within the greenbelt a certain percentage of land should be designated for UA to support long-term food security for the municipality. Decisions for infrastructure expansion (i.e. roads, sewer, water, etc) should be concentrated within the greenbelt so growth does not have the ease of jumping over the belt and encroaching on the peri-urban agricultural lands. Such growth management decisions should be indicated in the CLUP (2007) and development strategies and policies to support the greenbelt should be devised. Planning tools such as: infill development, mixed land use, compact development, subdivision regulations, etc. can be effectively utilized to maintain a successful "Naga City Greenbelt."
- **Inclusion of UA in Municipal Land Use Regulations** (Appendix 3). UA should be included in both municipal and sub-municipal or district land use plans. Lands designated for UA should have corresponding, specific development regulations to guide how the lands will be cultivated or utilized for agricultural production (Cabannes and Debbeling 2003). Supportive by-laws should facilitate UA development and be sensitive to nuisance laws. For example, by-laws and regulations should contain strategies for the placement of crops and livestock rearing that may be disruptive or place stress on adjacent land uses (e.g. residential or commercial).

9.0 SUMMARY OF RECOMMENDATIONS

The recommendations outlined in the previous section aim to build upon various assets currently present in Naga. While specific recommendations were made for respective program components, many touch upon similar issues, or employ similar strategies to foster the development of a showcase UA system in Naga City. The holistic nature of UA is manifested in these suggestions through their interconnections and ability to link programs and stakeholders which would not be considered as similar in other systems or contexts. In order to address recommendation similarities a matrix was created (Table 2 below), which illustrates the connections between key suggestions and the programs to which they adhere. It is hoped that this matrix will be employed as a quick reference to potentially guide future actions, illustrate the important program links, and contribute to the holistic nature of UA and the processes galvanizing its growth in Naga city.

Recommendation	Programs							
	Institutionalization of UA	**Agricultural R and D**	**Education (Farmers)**	**Education (Public)**	**Education (Planners)**	**Education (Politicians)**	**Marketing and Finance**	**Land Use Management**
Multi-Stakeholder Process	✓	✓	✓	✓	✓	✓		✓
Community Assessment		✓						✓
Data Collection		✓	✓	✓	✓	✓	✓	✓
GIS Mapping (ID of Idle Lands)		✓						✓
Asset Mapping	✓	✓	✓	✓	✓	✓		
Planning and Policy Making								✓
Collaboration with Academic Institutions and Schools	✓	✓	✓	✓	✓	✓		✓
Round Tables, Conferences and Workshops (Information Dissemination)	✓	✓	✓	✓	✓	✓	✓	✓
Technology Development and Capacity Building		✓	✓	✓	✓	✓	✓	
Promotion of Sustainable Development Methods		✓	✓	✓	✓	✓	✓	✓

Enabling of Strong Local Economies							✓	✓
Increase Awareness of UA in Public Realm	✓	✓	✓	✓				
UA Based Job Training			✓	✓			✓	
Integrate UA into Land Use Plans								✓
Creation of Legal Framework for UA Facilitation								✓
Make Use of Naga City's Assets	✓	✓	✓	✓	✓	✓	✓	✓

Table 2: Recommendation Matrix for Suggested Program Components for UA in Naga City.

10.0 CONCLUSION

UA's positive influences on urban and peri-urban landscapes are holistic and far reaching: poverty alleviation, food security, environmental sustainability, health promotion, social justice and strengthened local economies, to name a few. Underlying and fostering these benefits are the vital supporting components of enabling and institutionally enforced policies and regulations. When such mechanisms are informed by local people and supported by local governments a framework for UA success is in place and can begin to grow.

Naga City rests on the brink of such success. By making use of its many political, environmental, and socio-economic assets, it is in an excellent position to truly support a world-class UA system. Instead of waiting until food security issues increase, the city should tap into the vast amount of local agricultural knowledge, capitalize on the suitable agricultural conditions and vacant lands, and acknowledge the informal UA initiatives already in place in the city.

Upon completion of the research, a clear picture of Naga's central role as a UA showcase city became clear. The potential rests in the people, the government and the UA practices already in place. What is now required is the institutionalization of supports which can enable this potential to take root and flourish.

To conclude, we would like to suggest a possible project, "The Naga Farming School", which will assist in cultivating a healthy and sustainable UA system in Naga.

"The Naga Farming School": A Collaborative Multi-Stakeholder Pilot Project

An excellent means for generating discussion and collaboration around UA would be through the design, planning and construction of a Naga Farming School. The school would be a pilot project, showcasing all components of an ideal UA initiative in Naga City. The school itself would comprise of a multipurpose building with attached communal gardening plot. Ideally, the site would be on rehabilitated vacant lands which were given over to UA through landowner incentives and enabling policies. The design and planning of the site would take place through collaborative processes between all stakeholders, thus showcasing the city's ability to listen to all voices and value the knowledge of local people. The garden plots could demonstrate chemical free technologies, act as venues for workshops, and be run by local urban farmers or trained out of school youth. The multi purpose building could be the site for information sessions, workshops, classes, drop-ins, community dinners, cottage industry markets and festivals. The multi-purpose building could also serve as a site for technologies such as vertical gardening, container planting, roof-top gardening, water recycling (rain barrels, etc), and education information associated with these. Health and environmental workshops could also be held here as a means of providing a holistic view of UA and helping the community see the connections between healthy food, healthy bodies and sustainable agriculture. Finally, the centre itself could me constructed for local materials in order to support local industries and promote sustainability to a wider audience.

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Author Biographies

Ms. Kathryn (Kat) M. Hill
Kathryn Hill graduated from the University of Nottingham, United Kingdom in 2005, with a BSc in Geography. As an undergraduate she specialised in environmental change, international development and resource management, and so enjoyed her studies that she decided to pursue geography at postgraduate level. Following a year working in local government, Kathryn crossed the ocean to commence a Masters Degree in Human Geography at the University of British Columbia, Vancouver. Throughout the first year of her course, Kathryn completed courses in social theory, international development, environmental sustainability and gender studies. She travelled to Naga City in 2007 not only to undertake the studio course, but also her thesis research, which focuses on the impacts of the agrarian transition on women's livelihoods. After completing her degree Kathryn hopes to move into international development, working for a development agency or NGO.

Ms. Kaitlin P. Kazmierowski
Born and raised in the suburbs of Toronto, Canada, Kaitlin Kazmierowski always loved good food. In 2005, upon her completion of a B.Sc. in Environmental Science from the University of Guelph, Kaitlin took part in a seven month internship on an organic farm and realized that her love for food had grown into an outright passion for all food related activities including food security and food systems planning. Upon commencement of her Master degree at the University of British Columbia's School of Community and Regional Planning, Kaitlin has taken up the cause of farmland conservation and gets very excited when anyone mentions "New Ruralism". Kaitlin's decision to come to the Philippines was fueled equally by her desire to research UA, her interest in participatory governance and her inability to stop traveling.

Ms. Kathryn D. (Dee Dee) Quinnelly
Ms. Quinnelly is currently pursuing her Master of Science in Community and Regional Planning at the University of British Columbia in Vancouver, Canada. Her current research interests focus on urban development and design, specifically how policies shape the aesthetics of the built environment. Before entering UBC, Ms. Quinnelly received her B.Sc. in Community and Regional Planning from Appalachian State University in Boone, North Carolina, United States of America. This led her to her most recent position of four years employed as a Senior Planner for the Georgia Department of Community Affairs – Office of Planning and Quality Growth. Her decision to pursue the Naga City Planning Studio Course was driven by her desire to utilize and broadened her practical planning skills and to contribute to academic planning research. Urban agriculture in Naga was of particular interest to determine how planning and policy affects the relationship of aesthetics in built and natural environments (i.e. gardens, open spaces and farmlands).

Appendix 1: Research Notes

Stakeholder	Research Findings
Farmers: Focus groups and interviews were conducted with over 40 farmers in Pacol, Carolina, San Felipe and Panicuason.	• *Lack of access to credit and land insecurity* are the biggest constraints facing farmers. Most farmers had little access to land, and instead worked as tenants for more wealthy landowners. • *Limited access to education and training workshops* is also a constraint. Several of the farmers had benefited from workshops organized by international agricultural organizations (i.e. Monsanto), but had subsequently become dependent upon the companies for their agricultural supplies. • *Poor transport services* was also highlighted as a constraint facing farmers. It was noted that in the more remote barangays only two or three jeepney services run per day, severely restricting producers' ability to access markets, exchange skills and information etc. • *Unequal gender roles and responsibilities* characterize agricultural production in Naga. Female farmers spoke of heavy workloads and a lack of support from their spouses. • *Out-migration* is a concern. Many farmers spoke of the exodus of young people, lack of confidence among farmers, and desire to move out of farming to pursue less financially-constraining pursuits.
Market Vendors: Semi-structured interviews were conducted with stallholders and vendors in Naga City's public and satellite markets.	• *Strong political representation* exists for vendors through the Market Vendors Association. • *Lack of capital* continues to constrain market vendors, prohibiting diversification and reducing profits.

	• *Limited marketing assistance* was also highlighted as problematic. • *The presence of "foreign" (i.e. Chinese, Taiwanese) middlemen* in the producer-consumer chain was noted as a particular concern. Many stallholders made reference to large losses in profit, but argued that time constraints, familial responsibilities and poor transport services restricted their ability to buy produce directly. • *Many vendors relied upon loan sharks*, and admitted to regularly falling behind with loan repayments. • *There was reluctance to join cooperatives*, due to concerns about corruption and mis-management • *Apathy and lack of self-esteem* characterized conversations with vendors, indicating a severe need for capacity-building.
City Officials: Semi-structured interviews were conducted with city officials in the planning, agriculture and environment departments.	• *The lack of institutionalization of UA* was acknowledged as problematic by all officials. Many officials expressed concern that agricultural reform had been overlooked in Naga's previous planning and policy reforms. Officials made reference to unsupportive land management mechanisms (idle lands and land conversion legislation) and the lack of integration of UA into the municipal development plan. • *Officials were acutely aware of the need to develop UA in Naga,* and promote more environmentally sustainable agricultural practices, through organic farming and technology development. Beyond technology development, however, the agricultural staff showed limited understanding of the macro-level interventions required to strengthen the farming system. • *The need to coordinate and foster cooperation and information-sharing* between different department and levels of government was highlighted in the interviews. • *Naga's piecemeal approach to UA and*

	lack of visionary leadership in the agricultural sector was identified as an important constraint. • *Lack of access to funding* was also singled out as a prohibitive factor. Agricultural staff expressed interest at forging partnerships with NGOs and external research institutions, but seemed to lack the necessary know-how. The lack of proposal-writing skills was noted as a particular constraint. • *Lack of computerised systems, databases and GIS technology* was also identified by the researchers as problematic, severely inhibiting data analysis.

Appendix 2: Case Studies

Rosario, Argentina

Launched in 2002, Rosario's "Program de Agricultura Urbana" (PAU) was initially started in order to serve as an emergency food source during times of economic crisis (Guenette 2006). The PAU was started by the municipal government of Rosario, using the results of research supported by Canada's International Development Research Centre (IDRC) and UN- HABITAT's Urban Management Program (UMP) which coordinated the project. The PAU teamed up with local NGOs, the Centro de Estudios Producciones Agroecologicas (CEPAR-centre for the study of agroecological production) and Pro Huerta, a national program which supports family gardens. As the program grew, several other organizations became involved such as Jefas y Jefas de Hogar Desocupados (unemployed heads of households plan), a nationally supported plan which pays 150 pesos (roughly $50 US) per month to participants on the condition that they participate in some sort of labour, community work, schooling or training. Also, other participants included the Servicio Publico de la Vivienda (SPV- public housing service), Centro de Estudios del Ambiente Humano (CEAH- human environments studies centre), the National University of Rosario, city planners and the University of McGill's Minimum Cost Housing Group.

The effort to address the initial issue of food security during times of economic crises began as a food donation program coupled with organic gardening classes. Those who attended the classes passed their knowledge onto other community members; however, classes soon became too full as UA became increasingly popular due to its ability to give people real hope. The "Jefas" program proved successful as many participants opted to participate in UA activities. Soon there were 800 gardening groups in the city.

In order to integrate UA into urban planning, project partners and the city collaborated to assess suitable vacant lands by using aerial photos, databases from the land registry, and information provided by urban farmer workshops. This exercise allowed the barriers in communication between municipal officials and project partners to be broken down via interdepartmental workshops. Land was eventually loaned to urban farmers, and in 2004 the mayor approved a new regulation which formalized the temporary cession of property for UA. In addition, the mayor put PAU in charge of the database which controls the use of vacant land for farming.

Following another severe economic crisis, roughly 600 UA groups remained in Rosario, and it was decided that in order to ensure UA as a source of employment and a means for poverty reduction, farmers would have to produce more, sell more and add value to their products. In 2003 the PAU created seven weekly markets in different parts of the city. It provided vendors with distinctive canopies, tablecloths and baskets, in

order to identify them as local urban producers and increase public awareness regarding UA.

Several important outcomes have come from the PAU's actions. Many cottage industries have appeared, and the PAU has constructed a small factory for local natural cosmetic and vegetable processing enterprises; small companies which use the products of local urban farmers. Increasing amounts of land (especially lands along railways, roads and streams) have been converted to UA uses, and the PAU has begun digging wells for UA use. In addition, the PAU has begun creating "garden parks"; gardens found within the boundaries of protected parklands, often designed to include recreational and environmental education areas. Local gardeners were integral to the design of several garden parks.

In 2004 the PAU received the Dubai Award for Best Practices to Improve the Living Environment. The US $30 000 prize was used to buy a small tractor and a multi-use plough. The PAU also received funding from Italy's International Institute for Economic Development to market cottage industry products.

Governador Valadores, Brazil

In 2003, a project supported by IDRC and UN-HABITAT was initiated to identify plots of land for potential agricultural use in the city of Gorvernador Valadores (Guenette 2006). Other key players in this project included the municipal government, the Universidad Vale Do Rio Doce, and several local community organizations. This initiative had been spurred by many requests from local community groups for community garden support from local officials**.** In 2001, the authorities responded by installing water outlets in 12 communal gardens, but a true commitment to UA began when the city became involved in the IRDC-supported project.

In order to address the issue of poverty via UA, researchers used GIS to identify vacant plots suitable for agricultural production and discovered that in some neighborhoods, vacant plots out numbered those in use. Local community groups discussed potential policies that would enable UA in the city, and in 2004, the municipal government acted upon their recommendations by reducing property tax by up to 3% on lots given over to UA for a minimum of two years. In addition, it exempted those participating in UA on communal lots from paying for water. A new UA training program began in order to educate gardeners in chemical-free growing techniques while providing materials for fencing and cultivation. The municipal government has also added UA to the city's master development plan in order to foster its growth and ensure that UA remained an integral part of the urban environment.

There are currently over 50 community gardens now in operation, and it is estimated that these benefit over 3, 500 local people. Gardens have become incorporated into social housing developments, day cares, schools and community centres. These gardens are integral for outlying low-income neighborhoods where bus fare is needed to access public markets and local stores only sporadically carry fresh produce.

In order to weather a change in political power (a new mayor who was un-supportive of UA initiatives came into power in late 2004), several key organizations have taken up the UA cause, allowing it to benefit an increasing number of residents and become

further integrated into various social movements. The Catholic Church has promoted UA through its campaign to improve children's' nutrition, and the Associacao das Hortas Comunitarias (AuHcomut- community gardens association) has emerged as a representative body for most communal gardeners. Through AuHcomut, gardeners request materials and tools from the municipality, and are given rented space at the local market. The association has also secured some funding from the Banco do Brazil foundation to build 13 small greenhouses in the city. AuHcomut, along with other UA supporters coordinate their efforts in the IDRC-supported "Forum for Urban Agriculture and Food Security", which initially brought key players together to assess available vacant lands and design UA policies in 2003, but which now meets in order to derive new ways of promoting and supporting UA, enabling access to UA information for the public, and organizing city-wide meetings for urban gardeners to discuss future plans.

Despite the fact that the city is currently being operated by an un-supportive government, there has been a movement within the municipal offices to involve more departments such as Health, Education and Public Works in the Urban Agriculture Program.

The Stop Community Food Centre, Toronto, Canada (www.thestop.org/index.php.)

Started in the basement of a church in downtown Toronto as a centre for food distribution to low income residents, The Stop has grown into a fully operational and diverse community food security centre, with interdisciplinary programs operating on the premise that food access and security are basic human rights (Levkoe 2006). An NGO which works collaboratively with the City of Toronto Department of Parks, Recreation and Forestry, The Stop offers a variety of programs including community garden space, teaching gardens, medicinal gardens, a community oven, community kitchen, a food bank, and focuses on education and bringing people of various backgrounds together through food democracy and ecological farming techniques. In the past year The Stop recorded:

- 16,500 people used the centre to access food, information and advocacy as well as social and recreational activities
- 31,500 healthy meals were served through its community kitchens and drop-in cafe
- 204,000 meals were prepared for food bank users
- 2,400 pounds of fresh organic produce were harvested in its 8,000 - square-foot community garden and greenhouse

The Stop aims to challenge the "charity food model" by promoting involvement by all community members in their local food system, thus fostering food democracy, dignity and security. The Stop has many significant and ground breaking programs, and strives to create a democratic environment through the creation of a garden advisory committee, the hiring of community members, creating anti-harassment policies, organizing regular evaluation, planning and feedback sessions, and collective decision making.

The Stop's focus on participation as a means of maintaining dignity while accessing emergency food sources is also prevalent in its strong emphasis on community education. The Stop offers pre and post-natal nutrition programs for low income

mothers and as well as family nutrition programs which include free consultation with a public health nurse, free day-care, food vouchers, healthy snacks and workshops and information sessions. Children's education programs are also offered, and The Stop has developed food security-focused curricula for elementary and high school aged children which have been implemented in several schools in the city. Other programs offered at The Stop include:

- The Green Barn: an abandoned streetcar barn and industrial site which will be transformed into a community garden, a park, and education centre, community kitchen, outdoor oven and artists' space by 2008.
- Community Kitchen Drop-In: several cooking programs located throughout the city which not only teach cooking skills, but also the importance of healthy foods, how to cook seasonally and in a culturally sensitive manner, and how to eat healthy on a low-budget.
- Drop-In: the drop-in is open to anyone for a meal as well as other services such as free local phone calls, housing service information, workshops, community information on local services and programs, creative arts, settlement worker services, and housing advocate services.

The Stop is funded by private donation and well and through the municipal government, and it relies heavily upon volunteers to carry-out its operations. It is highly organized (The Stop has a strategic plan for 2006-2011), and keeps a comprehensive record of who it is benefiting in order to continue to ameliorate its services in an effective manner. The Stop has recently been awarded the "Green Toronto Award of Excellence" in the category of Environmental Awareness.

Dar es Salaam, Tanzania

The city of Dar es Salaam (Dar), Tanzania continues to experience incremental progress towards achieving food security. Compelling research and quiet advocacy contribute to the recognition of the role of UA in supplying food, creating employment and generating income for the people of Dar (Conway 2006). Perhaps one of the most critical features in the success of UA in Dar is a citizenry actively involved and supportive of UA. Specifically, Dar has been effective in implementation of the following components of UA:

- *Sustainable Dar es Salaam Project (SDP)* - led to the development of a strategic development plan and policies for integrating UA into city land management
- *GIS development* - utilization of GIS technology facilitated a community assessment and inventory of land suitable for UA
- *Garden Revival* - successful implementation of a project to revitalize urban garden centers

Sustainable Dar es Salaam Project (SDP)

In 1992, the city of Dar Es Salaam adopted the Environmental Planning and Management (EPM) approach in its City Consultation. This new approach has been the engine of change in many aspects related to urban agriculture. Under this new approach, the city held a mini-consultation in 1993 to deliberate on agriculture (van Veenhuizen 2006). In the consultation, stakeholders agreed that agriculture in the city contributed substantially (almost 30 percent) in household food supplies

and that it had become an integral part of urban livelihood strategies (van Veenhuizen 2006).

As a result of the consultation, a Working Group was formed to work out strategies for putting urban agriculture on the city agenda. The Working Group used a participatory approach to come up with a strategic plan on urban agriculture for the city. The proactive Work Group prepared a plan, implemented demonstration projects and further integrated agriculture into the city's urban zoning (van Veenhuizen 2006). As reflected in the Strategic Urban Development Plan (SUDP), the Work Group determined where and to what extent agriculture should be practiced in the city (van Veenhuizen 2006).

In the SUDP, special land zones have been designated for agriculture. The SUDP also has deliberately set apart several areas to be used for large- and medium-scale urban agriculture in the future and gives corresponding development conditions (van Veenhuizen 2006). This is contrary to Dar's 1978 Master Plan that considered UA as a transitional land use (Conway 2006). Since the SUDP considers UA to be an important activity contributing to the welfare of its citizens, designated lands receive a level of protection from the transition to other land uses. Recognition of the level of importance of these lands is also reflected in several laws and regulations, among them are the Agricultural and Livestock Policy (1997) and the National Human Settlements Development Policy (Jan 2000) (van Veenhuizen 2006).

Development of GIS in Dar
With the financial and research assistance of the IDRC, a methodology for mapping vegetable production on open spaces (over 1,000m2) has been successfully implemented in Dar es Salaam, Tanzania (Dongus and Dresher 2001). The mapping procedure comprised an analysis of aerial imagery, mapping in the field, and integration of the results into a GIS.

According to Dongus and Dresher, the following advantages of using GIS proved most useful:
- Visualization of spatial data, particularly the distribution of agricultural open spaces in a city
- Possibility for data overlay in order to investigate relations with various relevant factors, e.g. designated land use, irrigation water quality, socioeconomic variables etc
- Potential for updating digital maps in the future, and extension to a greater range of topics and layers

Integrated in local government and planning processes, the GIS database has:
- contributed to raised public awareness on the situation of urban farmers;
- helped to improve extension services;
- supported town planners in planning analysis (Dongus and Dresher, 2001).

Garden Revival
To address the dilapidated state of Dar's horticulture gardens, Agriproject Foundation Department of sub-Saharan Africa or STOAS International, was charged with reviving city garden lands and negotiating the sale of the gardens by city

council to the garden employees (Conway 2006). While the goal to privatize the land was not reached, STOAS successfully employed local women and children to revive the garden lands. Involving local women and children fostered a spirit of stewardship and empowerment. Dar has been referred to as "a city of entrepreneurs" and the Garden Revival is a true reflection of the claim (Conway 2006). Approximately 30 women and children worked to rebuild water systems, erect fences, plant trees and grow crops (Conway 2006). The public process utilized in the Garden Revival was key in providing the community ownership necessary to achieve long-term results. To this day, four of the seven garden sites are still in operation (Conway 2006).

Kampala, Uganda

Kampala, the capital city of Uganda, has a population of 1.5 million (Dobyn 2004). Farming in the city began in the mid-1970s, in the wake of the Amin regime's "economic war". Crises, disruption, and unstable economic conditions mark the practice of UA as a survival strategy in Kampala. Until recently the activity was technically illegal, but the passing of an ordinance to legalize farming activities in 2004 signalled its increasing integration and significance on the city's landscape (Conway 2006). An estimated 35% of households in the entire city are now involved in agriculture. Kampala has been particularly successful at implementing the following components:

- *Kampala Urban Food Security, Agriculture and Livestock Coordinating Committee (KUFSALCC)* – provides a voice for urban farmers, and coordinates development activities, research, and advocacy.

- *Participatory Technology Development (PTD)* – allows for producer input in the design, development and implementation of technological innovations.

Kampala Urban Food Security, Agriculture and Livestock Coordinating Committee

KUFSALCC was formed in 2004 and draws its membership from local NGOs, the Kampala City Council, the Ministry of Agriculture, Makerere University, the National Agriculture Research Organisation, and the Consultative Group on International Agricultural Research (Conway 2006).

The committee have focused on livelihood issues, production systems, and marketing opportunities, including the use of schools as seed and seedling multiplication centres. They have also studied the health impact of urban farming, looking at food security and nutrition issues, and potential health risks from vegetables irrigated with sewage.

Participatory Technology Development

In Kampala, local authorities have tapped into urban producers' horticultural knowledge to develop planting systems optimising vertical space (Prain 2006). The PTD approach involved three main steps: 1) focus groups and workshops with local farmers to outline agricultural skills, knowledge and farming techniques; 2) a formal

survey of farming practices similar to that outlined above, which was complimented with laboratory analysis of samples; and 3) farmer-led experimentation.

However, progress is still to be made in Kampala. Limited urban space is putting increasing pressure on farmers who may not have enough land to cultivate crops (Dobyn 2004). The management of land is a tangled mix of customary, colonial, and modern land tenure projects (Conway 2006). For farmers, the current procedures for accessing land are described as bureaucratic, time-consuming and complex (Conway 2006). Land ordinances that aim to conserve wetlands, greenbelts, and drainage channels further restrict farmers' accessibility to open areas. These problems point to the need for more clear policy and guidelines on land use that include UA.

Cagayan de Oro, Philippines

Shortly after the passage of the LGC in 1991, the CAO in Cagayan de Oro embarked upon a pro-UA policy. Institutional support for UA is increasing on account of a) successful project showcases; b) tripartite partnerships between local government, NGOs and Pos, and; c) legislation in support of UA. The CAO facilitates several agricultural activities in Cagayan de Oro, including: a) agricultural extension services; b) home management extension services; c) strengthening of farmers' cooperatives and; d) Farming Youths Development Programme. The media (i.e. local TV stations and newspapers) cover most of the city's UA approaches, promoting support for and creating awareness of UA among farmers and the public alike (Potutan et al 1999).

Education - Fundamental to the project has been the establishment of the Farmers' Field School for local high school students. The CAO has also promoted the development of school gardens, and 96% of public elementary schools in the city now maintain a garden. This activity is pursued by pupils as part of the school curriculum and supervised by principals and teachers. The size allotted for gardens ranges from 500-1,000 m2. The pupils usually plant leafy vegetable, fruits, ornamental and herbal plants. School administrators have typically adopted bio-intensive gardening, designed for pupils to learn UA in both formal and informal education approaches. Many of the community kitchens in the city also have adjacent gardens (Potutan et al 1999).

Waste management - Environmental sustainability also features heavily in the city government's UA mandate, particularly with regards to solid waste management. In 2002, Cagayan de Oro city government embarked on a pilot project linking solid waste management with the production of vegetables in allotment gardens using compost made from the biodegradable wastes of the surrounding community (Holmer et al 2003).

A typical barangay allotment garden consists of eight individual family units having a 300 m2 parcel of land, who are organised in an association (Holmer et al 2003). The land is leased from local landowners, at current rates for agricultural lands. The area is fenced, has an entrance, a tool shed, a nursery, a water supply, and a compost heap for the biodegradable household wastes. Beneficiaries are recruited based on their income; their willingness to do the actual garden work, to participate and share experiences; their residency near the project site and being residents in the pilot

barangay. The beneficiaries contribute to the project though labour. They are also obliged to contribute towards setting up a fund for the associations which could be used for replacing damaged tools and other equipment and for obtaining resources and new members, thus ensuring sustainability. Beneficiaries are also charged with ensuring maintenance of the compost heap, to prevent odorous smells and health risks.

Since 2003, five self-sustaining gardens have been created in different urban areas if the city, enabling a total of 50 urban poor families to get legal access to previously vacant land for vegetable production (Holmer et al 2003). The private landowners participating in the project have been so convinced (particularly due to added protection from garbage dumping and illegal squatting) that they have offered other areas in the city to be used for allotment gardening.

In the city districts that have an allotment garden, the health status of residents has also improved, and the amount of residual wastes delivered to the landfill site has been reduced by more than one third since the segregated bio-degradable household wastes are converted into compost in the gardens. Measures are now being taken to further advocate and promote, and ensure long-term tenure of, allotment gardens. The city government is presently mainstreaming the allotment garden concept into its overall city planning and development, which will also use participatory GIS-based approaches to identify suitable areas for future garden sites. And a city ordinance is presently being prepared to reduce taxes for landowners who make their land available for this purpose.

Appendix 3: Innovations

Farm to School Programs

School gardens are a means by which children can participate in design, implementation and reap the fruits of their labour. Alexander et al (1995) studied the Bexar County Master Gardeners non-profit program in inner-city San Antonio. In this study, volunteer master gardeners would help classrooms establish gardens, teach children the skills needed to care for plants, and allow children to decide how their garden would be designed and used. The benefits of such classroom gardens included increased motivation to come to school, increased self-esteem, moral education (nurturing skills, cooperation, delayed gratification), and the positive spin-offs which resulted from children starting their own gardens at home or in their communities.

The "snack garden" program at an elementary school in Westminster Vermont not only provided children with the experience of planning and working with a local farmer, but taught them canning skills which they used to preserve garden snacks for the winter months (Canaris, 1995). During the summer months, each child's family would be in charge of caring for the garden for one week (this included weeding, watering and planting), to ensure a full harvest for September. Parents were also in charge of organizing weekly family outings to the garden, thus allowing the positive benefits from this child-friendly environment to incorporate a larger community.

The City of Toronto also promotes organic gardening practices to youth through its programs at the High Park Children's Garden (City of Toronto, 2007). The program provides hands-on gardening experience to urban youth through workshops, arts and crafts and natural heritage education. School children visit the garden as part of a field trip activity and are encouraged to plant seeds, harvest produce, care for the garden and learn about soil, composting and nutrition (City of Toronto, 2007).

College and University Farms

There are several student-run college and university farms across North America. While many campus farms often serve as a "living laboratory" for a variety of courses offered at various academic institutions, their growing popularity is beginning to exceed this narrow role. Campus farms are increasingly fulfilling the dual roles of providing hands-on balanced educational experiences for students while fueling the campus with healthy local foods (Sayre, 2004). Campus farms allow students to gain practical perspectives regarding a range of environmental issues which are pertinent to all academic disciplines, while learning that many intelligent ecological solutions can be found close by, despite the often inflexible institutional constraints (Brodie, 2006). It is also felt that campus farms allow students to balance intellectual skills

with vital manual skills as a means of promoting well-rounded educational experiences and problem-solving abilities (Sayre, 2004).

While many on-campus farms face the challenges of high student-worker turnover rates and economic viability, Sayre (2004) argues that a common misunderstanding regarding campus farms is that they should be making money when in reality their educational worth far outweighs monetary gains. However, some economic stability is required to ensure that farms can continue to educate and produce food. A variety of US college and university farms have implemented creative ways of supplying food to the campus community and beyond in order to ensure financial security for the future while continuing to serve as a practical educational tool.

The concept of Community Supported Agriculture (CSA) is based on selling "shares" of farm produce well before the growing season. This ensures that consumers receive fresh produce each week (depending on growing season and crop) of the growing season and share in the risk of an agricultural operation, while farmers receive much needed pre-season funds (Bradley and Ellis, 1992). Oberlin College farm, Common Grounds Farm at University of Vermont, Hampshire College Farm and the student farms at UC Davis and UC Santa Cruz are examples of successful on-campus CSAs which not only provide produce to campus residents, students and faculty, but tailor their services for campus life (Sayre, 2004, Brodie 2006, UC Davis, 2007). The Hampshire College CSA has over 200 members, 50% of which are students. Therefore in order to improve accessibility for student members, the CSA offers a "fall" share, which lasts from September 1st until Thanksgiving (Sayre, 2004). Oberlin College CSA provides "institutional shares" which are sold to college dining halls in order to promote local food on-campus (Sayre, 2004).

Other strategies include selling farm produce at local farmers' markets or weekly on-campus farmers markets (Cornell, 2006; Brodie, 2006), registering student farms as non-profits, or organizing campus farms as student clubs in order to receive supplemental funding from student council, as Cornell University, Cook College and University of Idaho have done (Sayre, 2004). In order to promote the educational benefits of campus farms while ensuring that the farm produce is being regularly tended, institutions such as Vassar College and Wilson College have employed and trained student farmers in exchange for reduced rent/ tuition or other benefits, while several schools including Yale, Oberlin, UC Santa Cruz and Dartmouth, offer farm apprenticeship and summer field course opportunities (Sayre, 2004; Yale University, 2007). These programs are considered valuable, not only because they train future farmers, but educate consumers; thus enabling the continuation of local food availability on campuses throughout North America.

Urban Agriculture Conferences

Institutional measures to achieve the aims of municipal planning policy might include the reorganization of municipal government staff, or the reallocation of human and other resources. The amalgamation of departments, or the institution of a land-use policy or environmental review committee, might be examples of this kind of institutional measure (Quon 1999).

Institutions can successfully deliver community UA services; however they often lack co-ordination at the national, provincial, and local level as well as information about the planning and implementation of UA programs (Spies 2000). In March 1998, IDRC conducted a Municipal Policy Review project in South Africa that took the form of an international conference and workshop at Technikon Pretoria. The conference aimed to share information on problems, solutions, networks and urban agriculture; to identify the need for policy guidelines and the roles of players in UA; and to investigate key issues (institutional, environmental, socio-economic, UA practice) where action was needed (Spies 2000).

The international conference on UA in South Africa created an opportunity for a comprehensive overview of issues that affect the practice of UA. The IDRC project not only represents a milestone in the development of guidelines for a policy review process in South Africa, but it contributes towards discussions on the importance of policies to support UA projects and increases awareness and understanding of the importance of UA as a source of food production for the urban poor. It was determined that a key to success of implementation of UA lies in the institutionalization of UA programs (Spies 2000).

Marketing Cluster Associations

In northern Philippines, Norman Veggies farmers have formed marketing clusters to reduce their vulnerability to market shocks and fluctuations. The associations follow a quality assurance plan, train themselves in good agricultural practices, and designate lead farmers to act as quality managers and coaches. In Naga, implementation of marketing association would be facilitated the participatory governance structure, and experience and knowledge of Metro PESO (Concepion et al 20006).

Land Conservation via Greenbelt Initiatives

The Ontario Farmland Trust is an organization dedicated to fostering the preservation of farmland for agricultural production in Ontario. As advocates for farmland preservation, they specialize in the development of tools designed to protect agricultural lands. The trust recognizes that effective farmland protection must provide the support necessary to foster a thriving farming community on that farmland (Hilts 2004).

The Ontario Farmland Trust offers the following recommendations regarding the creation of a thriving agricultural community in a municipal greenbelt:

1. Avoid leapfrogging - policies and development regulations must support concentrated development, at higher densities, with transit provided, and brownfield redevelopment emphasized, in existing urban centers. These basics must be in place to successfully implement a municipal greenbelt program.
2. Recognize the necessity of supporting a vibrant and thriving farm community while preserving farmland. Farmland preservation programs must be combined with support for a specialized kind of agriculture near urban areas.
3. Enable the use of new tools for innovative approaches to farmland protection, such as agricultural easements. Easements provide a stronger means of defining

permanent farmland protection than zoning alone, while also providing financial support for farmers who choose to stay in the greenbelt.

4. Restructure municipal property taxes and property assessment procedures to provide positive incentives for farmers, including opportunities for value-added production and secondary uses on farms. This should include establishing a 'Stewardship' category under the assessment process whereby landowners who meet acceptable standards of stewarding their land, receive an appropriate property tax incentive.
5. Recognize that the term 'greenbelt' gives an inappropriate impression to many. Greenbelts are often perceived as 'public open space' when, in fact, much of it is private, working farmland. The role that the active farmers play, both as private landowners and as businesspersons and women, is going to be a key to maintaining the 'greenbelt'.
6. Provide direct assistance and core funding to effectively carry out greenbelt programs. Adequate funding supports the holding and monitoring of easements, near-urban agriculture, and support for young entering farmers.
7. Once farmland is designated for protection in the greenbelt, it should have priority over all other land uses, including aggregates, highways and public utilities (Hilts 2004).

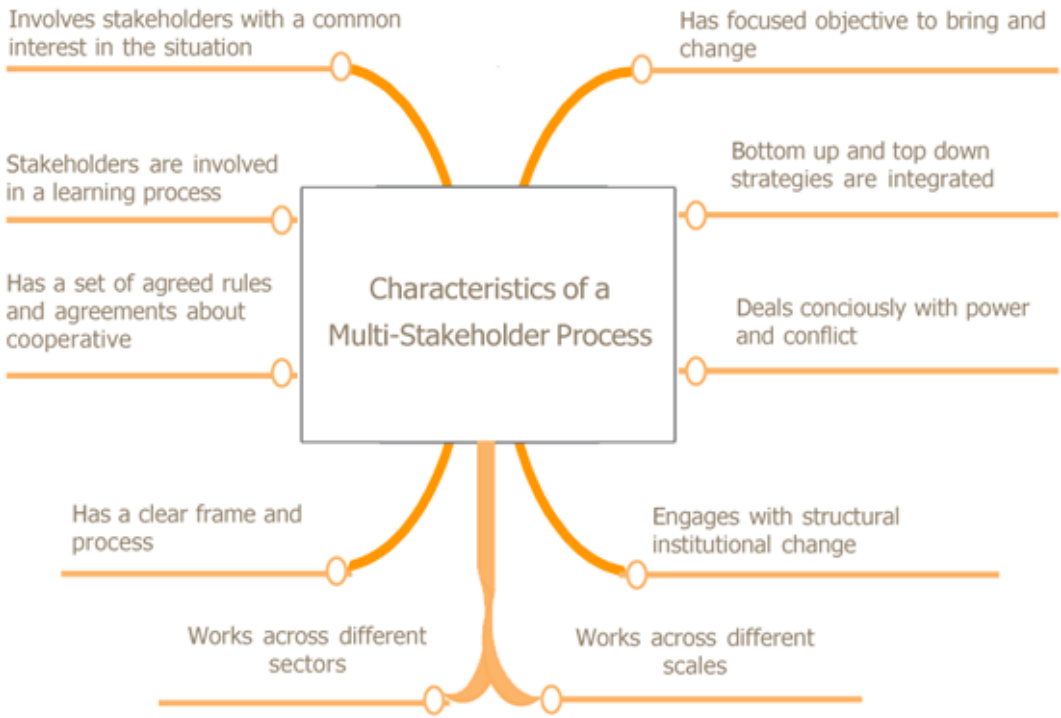
Multi-Stakeholder Process of Urban Agriculture

Multi-Stakeholder Processes (MSPs) are:

- processes that aim to involve stakeholders in improving situations that effect them
- forms of social interaction that enable different individuals and groups, who are effected by an issue, to enter into dialogue, negotiation, learning, decision making and collective action
- about getting government staff, policy makers, community representatives, scientists, business people and NGO representatives to think and work together (Dubbeling and Merzthal 2006).

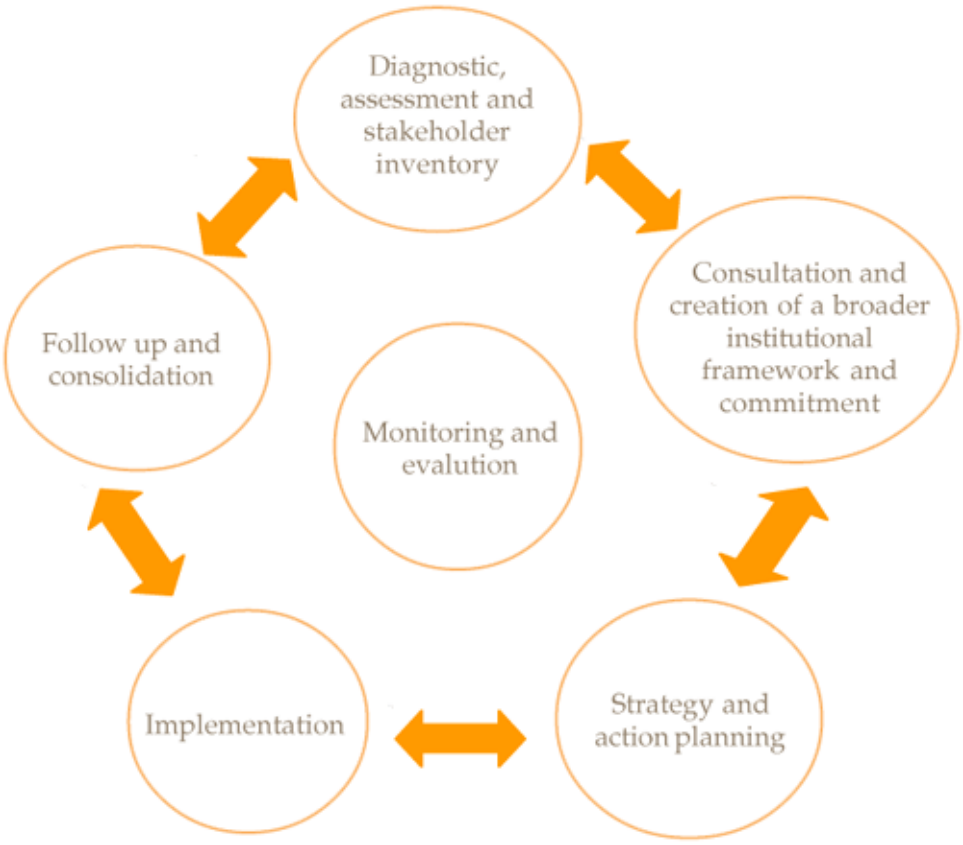
To best understand what characterizes a MSP and the phases generally experienced when implementing such a process, the following visual aids are provided:

Characteristics of a MSP



Source: Dubbeling and Merzthal 2006.

Phases of a MSP



Source: Dubbeling and Merzthal 2006.

Whenever possible, it is important in this first phase to negotiate and formalize initial agreements and commitments on how the process will take place, what objectives it is aiming at and which stakeholders will participate in what role, to promote transparency, building of trust and institutionalization of the process (Dubbeling and Merzthal 2006). The following is an example of an inter-actor agreement utilized in Quito-Ecuador to negotiate and formalize initial agreements and comments (Dubbeling and Merzthal 2006).

Inter-actor agreement for development of an baseline study and action plan on urban agriculture

We (names of stakeholders.....) sign the present inter-actor agreement, containing the following clauses:

First clause - Objective

The above-mentioned stakeholders agree:

a. To gather data on the development (key data and impacts), farming types, involved stakeholders and key issues (problems) of urban agriculture in the city (baseline study),
b. To facilitate and strengthen dialogue with involved stakeholders to identify broad strategies to address these key issues, highlighting the consequences if key issues are not addressed,
c. To regularly monitor project development and results, and
d. To disseminate project results through different local forums and media so as to encourage other organizations to join in further development of action planning and policy design on UA.

Second clause - Project Team

A Local Project Team has been formed to facilitate the process of participatory diagnosis, action planning and establishment of a multi-stakeholder platform on UA. The actors signing this present agreement will form part of this team and will be in charge of planning and implementation of the activities.

Third clause – Tasks of the Local Project Team

a. Coordinate all the efforts needed to implement the afore-mentioned activities using a participatory and multi-stakeholder approach, and ensure the results are achieved,
b. Assign a project coordinator who will maintain efficient communication among team members,
c. Support project implementation with human and financial resources and existing logistical facilities:
    - the local government will make available the latest land use (GIS) maps and cadastre, as well as the present city development plans and legal/normative frameworks related to UA

- the NGO will make its office and communication facilities available for regular team meetings
- the University will support participation of two students for field work and organize transport to the field

d. Identify and mobilize new stakeholders and donor agencies that will contribute to successful project implementation and further development of an action plan,
e. Prepare monthly reports on activities realized, results achieved and lessons learned to facilitate project monitoring and inter-regional exchange.

The agreement can be modified upon agreement of all signing parties. (signatures of all stakeholders.....)

*Source: Translated from the Spanish version of the inter-actor agreement elaborated in the context of a city consultation on UA, supported by the Quito municipality, IPES/UMP-LAC and IDRC. (2000-2002) (*Dubbeling and Merzthal 2006*).*

Innovation: Municipal Land Use Regulations

UA should be included in both municipal and sub-municipal or district land use plans. The plans need to be studied to determine spaces that can be allocated for cultivation, aquaculture, animal husbandry and forestry, among other activities (Cabannes and Debbeling 2003). It is recommended that the land use plans be part of strategic plans and urban development plans.

It is also recommended that these land use plans exist not only at the city level, but also at lower levels, such as neighbourhood improvement plans, subdivision plans, district development and urban renewal plans (Cabannes and Debbeling 2003). Creating land use plans at this micro-level facilitates delineation of spaces that could potentially be used for UA.

Guidelines for Municipal Policy Making on Urban Agriculture

A municipal policy includes regulations for developing both municipal and local land use plans. These should be included in the city's legal system and should provide for the following:

- Urban, peri-urban and rural-municipal zoning
  - multi-level zoning makes it possible to adapt the general standards to the demands of growth
- Rules and Standards for districts and UA areas
  - Like industrial zones, these districts are not usually included in the regulatory frameworks. They must be designed so as to facilitate intensive production, with the use of treated wastewaters and integrated spaces for food processing, storing and marketing. These areas can be managed as public, shared or private schemes
- Standards for parks and public spaces
  - municipalities should reserve a percentage of municipal lands for farming purposes and specify the type of activities allowed
- Standards for new lot assignments and urban renewal

- A percentage of land should also be reserved for UA, with clear rules concerning use, density, etc. These should take into account mixed use of parcels (e.g. residential and agricultural). (Cabannes and Debbeling 2003).

Participatory Community Assessments

In Khorogo, a quantitative analysis was undertaken with the assistance of AGROPOLIS to identify the determinants of small ruminant adoption (Barry 2005). The study was based on proportional sampling over one-third of the city's land area. The livestock density was first estimated by following transects through the city's 11 neighbourhoods, counting the number of livestock. On the basis of this livestock density, 90 households were randomly selected and surveyed. Within each household, data was collected on factors including age, gender, education level, nationality, number of members in household, wife's primary occupation, household income, primary occupation of the household, and number of years experience in farming. The results were analysed using the 'Empirical Tobit Model'. Gender was identified as the most important variable in livestock ownership. While focus was placed specifically on livestock adoption, the analysis could be readily transferred to crop production, aquaculture etc, and made highly applicable to the Naga context.

Micro-Enterprise Management

In a participatory planning initiative undertaken in 2000, the local authority in Hubli-Dharwad, India, conducted meetings with poor women's groups to prepare agricultural action plans (Cabannes 2006). The meetings revealed that income-generation efforts were failing because agricultural policies were not up to speed with market demands, such that the products made by women's groups were obsolete.

To create new options for the poor to access markets, the government and DfID focused on capacity-building through the MOVE (Market Oriented Value Enhancement) program. Under MOVE, a small group of poor landless peri-urban women were selected and trained in the basics of setting up and running micro enterprises. They were given training on markets, to help them understand market dynamics, distinguish between qualities of products, enhance their marketing strategies, negotiate with retailers and form direct relationships with consumers.

The women were also encouraged to form cooperatives, in order to share risks and labour, and were taught to understand the difference between group-based product identification and market-oriented product identification. By collaborating with an international NGO, the scheme has also been of minimal cost to the local authority, and the women's profits have increased significantly.

Evolving Credit Schemes

Most studies indicate that financial support for UA is best based on a combination of three mechanisms: savings, subsidies and (micro-) credit (Cabannes, 2004). This co-responsibility principle forms the basis for models of evolutionary loans with decreasing subsidies, such as that adopted in Case Melhor. The table below is based

on the pioneering evolving credit scheme. Over time, the subsidy component was gradually reduced, but the saving component increased, along with the value of credit. In this model, the fourth loan was not granted by the municipal local fund, but alternatively by private banks. The fund thus acts as a bridge that allows poor people, normally excluded from the formal banking system, to get access to higher-valued loans managed by banks, having being gradually introduced to repayment obligations and systems of savings. The regressive subsidies, in addition to their value for the people, acquire a social function, fostering the inclusion of those who had no access to formal credit before. In Naga, adoption of similar credit schemes may be facilitated by the high number of private banking institutions. NGOs may also provide an alternative funding source.

Example of evolutionary loan system

	Savings	+	Subsidies	+	Credit	=	Total
1st loan	1		2		3		6
2nd loan	2		1		3		6
3rd loan	2		0		4		6
4th loan	Private banking system						

Source: Cabannes, Y., 2004.