



Formulating a framework for comprehensive land use, and development policy: addressing issues in land resource management

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Abstract:

The simultaneous development of both the agricultural sector and the industrial sector is expected to generate self-sustaining effects on economic growth, considering that both sectors perform complementary roles that become mutually beneficial. Increasing productivity in the agricultural sector produces more food and raw materials which the industrial sector purchases and transforms into higher value-added finished products. Higher productivity in the agricultural sector increases farm incomes, allows households to spend more, and with the large rural population, becomes a strong market for goods produced by industry. As industry grows and becomes more competitive, manufacturing firms increase productive capacity, create new jobs and absorb the surplus labour from the agricultural sector. With the expansion of industries as well as markets for industrial products, manufacturing investments begin to flow within the peripheries of the agricultural sector, looking for cheap land, raw materials and low cost labour. This consequently facilitates the development of rural areas, creating more jobs in the countryside and allowing industrial development to spread beyond the metropolitan areas.

The study discusses the need for a comprehensive and sustainable land use policy framework that will identify and establish which lands can be used for: 1) agricultural, industrial and commercial production; 2) residential settlement; 3) infrastructure development and; 4) the protection of forest, watershed areas and natural parks. Findings indicate that establishing the appropriate land use policy will require heavy participation from civil society, particularly the community and the stake holders. Local governments will be extremely crucial since they have the most active role and must be guided and empowered to regulate land use. It will be necessary to have three planning layers involving the province, municipality/ city and barangay with the local governments implementing land use policy for all public and private lands

Key words: Comprehensive and sustainable land use policy framework, Agro-industrial development Public, private and ancestral domain, local government participation, ecosystem protection



1. INTRODUCTION

The simultaneous development of both the agricultural sector and the industrial sector is expected to generate self-sustaining effects on economic growth, considering that both sectors perform complementary roles that become mutually beneficial. Increasing productivity in the agricultural sector produces more food and raw materials which the industrial sector purchases and transforms into higher value-added finished products. Higher productivity in the agricultural sector increases farm incomes, allows households to spend more, and with the large rural population, becomes a strong market for goods produced by industry. As industry grows and becomes more competitive, manufacturing firms increase productive capacity, create new jobs and absorb the surplus labour from the agricultural sector. With the expansion of industries as well as markets for industrial products, manufacturing investments begin to flow within the peripheries of the agricultural sector, looking for cheap land, raw materials and low cost labour. This consequently facilitates the development of rural areas, creating more jobs in the countryside and allowing industrial development to spread beyond the metropolitan areas.

Agro-industrial development should raise income, create more jobs, strengthen markets in both sectors and allow the countryside to further close the gap in living standards with the more industrialized urban areas. To a certain extent, this process is currently taking place in the Philippines. However, there are major obstacles that tend to slow down the process of spreading out development from the industrial areas to the countryside. One of these major obstacles is the lack of a comprehensive and sustainable land use policy. Conflicts in land use have occurred between groups protecting the private domain (which includes alienable and disposable lands), the ancestral domain (involving land owned by ethnic groups and minorities), and the public domain (which covers untitled alienable and disposable lands, national parks, forests and mineral lands). The absence of an effective land use policy has created problems associated with: agricultural land being converted into other uses which

comprises the food security goal, illegal settlers living in disaster prone areas, severe traffic congestion in over-crowded metropolitan areas, mining operations contaminating inland and coastal waters, and industrial firms generating air, water and land pollution which reaches farmland and residential settlements.

Objectives

The study discusses the need for a comprehensive and sustainable land use policy framework that will identify and establish which lands can be used for: 1) agricultural, industrial and commercial production; 2) residential settlement; 3) infrastructure development and; 4) the protection of forest, watershed areas and natural parks. Findings indicate that establishing the appropriate land use policy will require heavy participation from civil society, particularly the community and the stake holders. Local governments will be extremely crucial since they have the most active role and must be guided and empowered to regulate land use. It will be necessary to have three planning layers involving the province, municipality/ city and barangay with the local governments implementing land use policy for all public and private lands

2. METHODOLOGY

A description of conflicts in land use will be presented alongside a discussion of the appropriate policy interventions necessary so that a framework can be established that will facilitate the optimal use of land in the Philippines.

3. RESULTS AND DISCUSSION

The Philippine population is currently estimated at 99.02 million people and is expected to grow annually at a rate of 1.67 percent (NSO, 2014). On the average, 51 percent of the total population live in the urban areas, with the remaining 49 percent in the rural regions. As of 2013, the share of employment provided by the agricultural sector is at 31 percent. Manufacturing employment contributes 8.3 percent while mining and



quarrying account for 0.6 percent. Construction, the utilities sector and the entire service sector are responsible for 60 percent of the employment generated in the entire economy. This growing population has continuously put pressure on the demand for land and its competing uses.

The total land area in the country is approximately 30 million hectares, wherein 15.8 million hectares are identified as forest land and 14.2 million hectares considered alienable and disposable land (NAMRIA, 2009). In order to provide adequate housing, food, water and employment opportunities in both the agricultural and industrial sectors, a plan for the optimal allocation of land resources must be formulated.

The economic use of land as an input for production in both agriculture and industry must seriously consider the simultaneous need to protect the environment by preventing the contamination of ground water and surface water sources, as well as inland, coastal and bay fishing areas from industrial waste, mine tailings and agricultural run-offs. Aside from the need to make firms responsible for the cost of pollution, the protection of watershed areas and forest reserves from both legal and illegal loggers as well as informal settlers should stop the rapid denudation of forest cover which is responsible for soil erosion on mountain slopes and the desertification of land.

Land use policy should also include provisions that will allow the eradication of poverty as a primary social development goal, the promotion of social justice where the marginalized sectors of society participate and benefit from the allocation and use of land and the protection of the property rights of indigenous peoples and cultural minorities in areas where mining activities are proposed.

The regulation of land ownership, its acquisition, actual use and disposition cannot be left to the market alone considering that land has multiple and competing uses, has a fixed supply, and is subject to various externalities/ spill-over effects particularly when it is subject to a wide variety of uses by farmer groups, ethnic tribes and minorities, real property developers, industrial and commercial firms, and the mining sector.

Rapid urbanization and problems

created by inefficient land use

Urbanization, which is the economic and demographic process that transforms underdeveloped municipalities and emerging cities into highly urbanized areas has created severe traffic congestion, waste disposal, flooding and informal settler problems particularly in Metro Manila and Metro Cebu. The enormous amount of infrastructure spending being poured into these two major metropolitan areas has led to their rapid rate of modernization, which has attracted more private sector investment and the creation of new jobs. Road expansion, the construction of skyways and flyovers in major thoroughfares, as well as the provision of mass transport systems such as commuter trains have attracted more people into these highly urbanized cities in search of employment and business opportunities. The entry of new investments and employment opportunities continues to strongly attract migrants from the rural areas increasing the size of the urban population and creating more congestion and overcrowding in the use of mass transportation systems. The rising urban population increases the demand for practically all goods and services such as food clothing, shelter, health care, transportation, education, recreation and other services, increasing prices and raising the cost of living.

The poor implementation of proper zoning regulations caused by the ability of large corporations to influence local government officials has led to the proliferation of large scale shopping malls, other commercial, industrial and residential establishments in already heavily dense and overcrowded cities creating more traffic congestion, larger demand for all goods and services and greater pressure on government to provide peace and order, security, sanitation and other essential public services in the metropolis.

The occurrence of the urban sprawl where automobile dependent residents build homes in suburban areas in order to avoid heavily congested urban cities, may partially reduce congestion in residential urban areas. However, this leads to inefficient land use since larger tracts of land with lesser households are established. Fewer housing units are built per hectare, with most of the



residential subdivision development slowly encroaching on land being used for agriculture.

Informal settlers

Excessive rural to urban migration caused by the need of migrants to find better economic opportunities also increases the demand for housing in overcrowded cities. This forces unemployed migrants to become informal settlers in geographically hazardous areas such as unoccupied land directly on an earthquake fault lines, mountain slopes and foothills vulnerable to landslides, riverbanks that overflow because of rainfall and flooding as well as coastline areas threatened by storm surges.

Unemployed, unskilled rural migrants become informal settlers in the metropolis occupying the banks of city waterways and canals. The construction of shanties along with their indiscriminate garbage and waste disposal practices clog and consequently block waterways prevent the free flow of water run-off from rainfall creating severe floods in the metropolis.

Informal settlers illegally access electricity from existing power lines using jumper cables and extract water through illegal pipe connections which increases the systems losses of the power and water utility firms. These systems losses are recovered by the utility firms by passing the cost to legitimate paying consumers who are subject to higher prices not only to cover their use of power and water but to shoulder those systems losses.

Urbanization has a built-in bias that further propagates this economic and demographic process repeatedly in the long run. As more infrastructure is built by government in order to decongest traffic and address shortages in mass transport systems, alongside the provision of more social services, the more this encourages people to migrate from the rural areas into these highly urbanized cities. As the urban population grows and cities become more congested and overcrowded, traffic further worsens, mass transport systems become overburdened, which will again require new infrastructure investments in order to alleviate the situation.

Without a rational land use policy, the problems created by rapid urbanization cannot be properly addressed. Local governments will always accommodate new investments by firms into their respective cities in order to generate tax revenue up to the point that the construction of new industrial and commercial establishments will lead to severe traffic congestion, air, land and water pollution from the excessive dumping of waste and severe shortages for water and electricity as these firms operate on continue to attract more migrants.

Urbanization and encroachment into agricultural and protected areas

Urbanization must be confined within a pre-specified area that prevents encroachment over irrigated agricultural land as well as protect forest reserves and watershed areas. To maximize the use of urban land for residential purposes, there must be a greater density of housing units for each hectare of land allocated for urban housing. A large number of housing units with floor areas ranging from 80 to 100 square meters may be constructed over a hectare of residential land. With several hectares allocated for housing, a greater concentration of residents will increase the economic viability of setting up firms in industrial and commercial areas that will be far enough to prevent traffic congestion but become proximately close and accessible because of the various modes of transportation that can be made available by both the private and public sectors.

Fiscal incentives provided through local governments should encourage the development of sustainable communities that encouraging walking or cycling to get to work or purchase goods and services from commercial areas, to have access to mass transport systems that facilitate longer distance travel, the promotion of water conservation and harvesting, the use of alternative sources of energy (solar and wind) as well as waste segregation and recycling.

The Urban Development and Housing Act (UDHA) of 1992 which has the mandate to provide decent housing for the underprivileged confines the provision of housing within classified residential areas and explicitly excludes lands covered by



Agrarian Reform. However, the UDHA does not necessarily exclude irrigated and irrigable lands protected under the Agriculture and Fisheries Modernization Act (AFMA) of 1997. This can lead to disputes particularly if local governments have a tendency to better facilitate the release of land use permits and clearances when housing projects provide a greater potential for real property tax collections in the future. The optimal concentration of housing units within a well-defined residential area along with the local government's enforcement of these boundaries should prevent encroachment into agricultural areas, forest reserves, watersheds and national parks and prevent the urban sprawl, which leads to inefficient land use.

Informal settlers and industrial firms encroachment into potential surface water sources

The Laguna de Bay area which is a potential source of water for Metro Manila and all other provinces in its periphery is threatened due to severe water pollution caused by industrial waste being dumped by firms located along its banks. Informal settlers also pollute the lake with their improper disposal of garbage and waste. Both legal and illegal fish pen operators contaminate the water with the unconsumed and decaying fish feeds that settle at the bottom of the lake.

This behaviour has led to heavy siltation in the lake that reduces its depth and decreases its ability to absorb heavy rainfall run-off during the typhoon season. Informal settlers living along the banks of the lake are at risk when the lake overflows and floods the surrounding areas forcing local governments to evacuate the residents and provide emergency shelter and relief. The informal settlers also struggle with real property developers who are intent on transforming the surrounding area into a lakeside residential and commercial district. Most of the informal settlers do not want to leave the area because of their dependence on the lake as a source of livelihood namely fishing, livestock and cropping.

Mining operations and negative externalities

Mining is a form of land use which destroys the environment through open pit mining as well as through the dumping of mining tailings that contain toxic chemicals in the form of mercury, arsenic, sulphuric acid, cadmium and cyanide just to name a few.

Large scale mining in Surigao del Norte and Surigao del Sur for example, illustrate the negative externalities or spill-over effects generated by poorly regulated operations. Spill over effects come in the form of toxic mine tailings that are dumped into streams and rivers contaminating watersheds and coastal fishing areas. An integrated land use policy is necessary in order to ensure that lowlands are protected from spill-over effects coming from mining activities originating from the uplands.

Protecting watersheds, forest reserves, national parks, wildlife sanctuaries, bay and costal areas

The protection of coastal and forest areas must be a priority in land use planning at both the local government and national government level in order to help preserve water resources. Protected forests and watersheds maximize rain fall absorption, groundwater and surface water capacity regeneration and allow rainfall run-offs to coastal areas to facilitate the growth of mangrove forests. A coherent national land use policy is also necessary in order to reconcile conflicting local government policies concerning mining activities particularly if mine tailings flow through lakes and river systems that cross over municipal and provincial boundaries.

The establishment of clear boundaries for the delineation and demarcation of protected forest reserves, watersheds, natural parks, and wildlife sanctuaries from residential, industrial and commercial land should be accomplished at the earliest time possible in order to prevent further damage being caused by human encroachment. Both legal as well as illegal logging denude forests. The "kaingin" system of slash and burn agricultural being practiced by informal settlers (burning forests to clear land in order to plant cash crops on upland mountain slopes) further worsens the magnitude of forest denudation. The Revised Forestry Code of the Philippines (RFCP) under



Presidential Decree 705 provides for the protection, rehabilitation and development of forest lands while the National Integrated Protected Areas System (NIPAS) Act of 1992 establishes a comprehensive system of integrated protected areas ranging from natural parks to landscapes and seascapes, to wildlife sanctuaries and small watersheds (Senga, 2001). Although these laws have been enacted, enforcement has been inadequate in view of the lack of manpower and logistical resources at the local government level which is needed in order to monitor the protected areas and apprehend and penalize violators.

Mining activities which encroach into protected areas have devastating effects on the environment. The search for mineral ore is done through either open pit mining or by digging tunnels through mountains and conducting deep excavations within the area. Open pit mining is the most destructive process since it will require the clearing of a forested area, the deep excavation of land in order to find the underground mineral reserves or at worse, use explosives to blast through hard rock.

The Philippine Mining Act of 1995 provides the legal framework on the use of mineral lands and promotes rational exploration, development and utilization of mineral resources (Senate Economic Planning Office, 2013). This law identifies areas that can be used for mining which may include forest land. However, if the forest reserve, watershed, national park or wildlife sanctuary is protected by the NIPAS law, these areas will be considered prohibited by the Philippine Mining Act. Considering that both laws are to be implemented and enforced by the DENR, through its respective line agencies, conflicts between the goal of protecting certain areas and approving applications for mining will be less difficult to resolve. The DENR will have the sole authority to enforce laws that protect certain land areas and will deny the issuance of any permit or clearance for mining activities particularly if it will endanger a forest reserve, watershed, national park or wildlife sanctuary (Senate Economic Planning Office, 2013).

Land conversion and its impact on food security

Large tracts of prime agricultural land with efficient irrigation systems should not be converted for residential, industrial or commercial use, more importantly for cases where government invested in the construction of a widespread irrigation system. Productive rain-fed agricultural land should be provided with land management systems that harvest rain fall into reservoirs or trap rain-fall run-offs using widespread stone line systems, the formation of terraces, and road side rain fall run-off harvesting. The production of rice in the country uses roughly 4.7 million hectares of land which makes up 36 percent of the entire country's 13 million hectares of agricultural land devoted for cropping (Piadozo, 2012). Coconut production uses 3.55 million hectares of land followed by corn production at 2.56 million hectares and sugarcane at slightly over 437,000 hectares (PSA-BAS Country Statistics, 2013).

Food security can only be achieved in the long term if prime agricultural land is not converted for any other purpose except for the production of rice, corn, sugar, coconuts and fruits. It will be necessary for the local governments to clearly delineate boundaries of land to be used for agriculture, properly reclassify the area for this purpose and enforce laws that prohibit land conversion. The Comprehensive Agrarian Reform Program Extension with Reform Law of 2009 excludes large tracts of prime agricultural land from land conversion. However, it will be necessary for local governments to implement and enforce the law, along with more severe penalties for violations involving the illegal issuance of land conversion permits or clearances.

Integrated land use planning

An integrated land use policy will be difficult to formulate if planning continues to be fragmented. Fragmentation occurs when the goals and objectives of various mandated oversight agencies are not coordinated with one another. Conflicts between the private domain, the ancestral domain, and the public domain occur because of competing land uses. The private domain which refers to alienable and disposable land is under the jurisdiction of the Housing and Land Use Regulatory Board (HLURB). Land areas targeted for housing may overlap with the ancestral domain whose mandated oversight agency is the National Commission on Indigenous Peoples (NCIP). Both



private domain and ancestral domain may also have some overlaps with the public domain characterized as untitled alienable and disposable land which can include the national parks and mineral lands. The public domain is subject to the Department of Environment and Natural Resources (DENR) as its mandated oversight agency.

Complicating the structure of private, public and ancestral domain is the identification of specific land areas as special economic zones used for attracting investments and developing industrial estates needed for job creation and the expansion of productive capacity. These are the export processing zones under the jurisdiction of the Philippine Economic Zone Authority (PEZA) and the Bases Conversion Development Authority (BCDA). The BCDA has oversight functions on the Subic Bay Metropolitan Authority (SBMA), which manages land use in Subic Bay Olongapo, Zambales and the Clark Development Corporation (CDC) in Clark Field Pampanga.

The Department of Agrarian Reform which is responsible for distributing large tracts of agricultural land to farmer beneficiaries is also expected to coordinate with the DENR and the HLURB. This is necessary in view of the numerous attempts at converting land into various uses from agricultural to either residential, commercial or industrial as well as the potential impact of conversion on the environment.

4. CONCLUSIONS

The goals of food security, water resource conservation, environmental protection and the efficient allocation of land for residential, industrial and commercial use can only be achieved in the long term as long as several important requirements are met. These include: 1) the establishment of clear boundaries separating protected areas from alienable and disposable land to be completed at the earliest possible time in order to implement delineation and demarcation by local governments; 2) the protection of watersheds and forest reserves in order to improve efforts at replenishing ground water and surface water sources and prevent the erosion of soil which leads to the siltation of river systems; 3) the exclusion of all irrigated and irrigable agricultural

land from land conversion in order to achieve the goal of food security, 4) the establishment of clear boundaries that will allow the potential expansion of urban areas (residential, industrial and commercial) without having to encroach on agricultural land, forest reserves and watershed areas; 5) the provision of government incentives to achieve optimal housing density, energy and water conservation as well as efficient disposal of biodegradable and recyclable waste in urban residential areas; 6) the strict implementation and enforcement of zoning laws, rules and regulations to ensure that residential, industrial and commercial areas are well separated in order to prevent traffic congestion and completely set apart the garbage and waste generated by each area; 7) the imposition of heavy penalties and fines for encroachment into protected areas and violations of zoning regulations in urban areas and; 8) improve the capability of local governments to plan the development of their respective provinces, cities, municipalities and barangays; 9) improve and enhance law enforcement at the local government level to effectively prevent encroachment into protected areas.

Laws to protect forest reserves, watersheds, national parks, wildlife sanctuaries, bay and coastal areas and irrigated and irrigable land have been enacted over the past four decades. However, implementation remains poor because of the lack of funding and logistical support to monitor these protected areas, apprehend violators and enforce the laws at both the local government level. In addition, local government officials succumb to the temptation of undermining zoning ordinances, rules and regulations particularly when presented with investment proposals from the business sector that promise larger potentials for tax collections as well as huge commissions from the approval of large scale construction projects involving residential condominiums, office buildings, industrial plants and malls. The enforcement of laws protecting land and the regulation of urban development is absolutely necessary in order to achieve food security, conserve water resources, provide adequate land for housing, industry and commerce and address the problems of informal settlements, traffic congestion and pollution in overcrowded urban areas.



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