



Lessons from the Samut Prakan Land Use Plan

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As part of its ongoing research efforts in environmental quality management, TDRI has undertaken a study to analyze current land use patterns in suburban provinces surrounding Bangkok and to make recommendations regarding future policies and strategies for land use planning. The provinces in this suburban ring (Samut Prakan, Pathum Thani, Nonthaburi, Samut Sakorn and Nakhon Phanom) are the most rapidly growing in Thailand and are potentially among the most important. Each year, they receive the largest share of new investment and produce the largest portion of new jobs.

While rapid growth in the suburban provinces is making a major contribution to Thailand's economy, that same growth is placing a major strain on the physical environment, social structure, and existing infrastructure. Air and water pollution are growing rapidly, and traffic congestion is among the worst in the region. The demand for water far exceeds the available municipal supply, and the resultant ground water pumping has led to serious ground subsidence. Even the visual amenities of the pastoral landscape threaten to be replaced by a polluted agglomeration of factories and dense housing, and critical environmental areas are being threatened with extinction.

While free market systems have made a major contribution to the Thai economy, it is now evident that total reliance on unbridled private interests will provide neither adequate protection for the environment nor an adequate infrastructure for the community. In the absence of effective government policy, there are insufficient incentives to ensure that the private sector will provide an adequate investment in roads, drainage, water supply, or pollution control.

While it is probably too late to do much advance land use planning for Bangkok itself, the suburban provinces still offer an opportunity to guide development in a manner that will enable Thailand to obtain the desired mix of economic activities and environmental quality. The question remains, are land use controls appropriate for this task and if so, what form should they take?

FINDINGS

An extensive review of Samut Prakan Province reveals a number of dramatic changes. After comparing the results from a TDRI study undertaken in the final months of 1989 with the land use map developed by the Town and Country Planning Departments, as well as earlier agricultural data, the following conclusions have been reached:

Patterns of Development

- Due to the province's proximity to Bangkok and its position as a gateway to the Eastern Seaboard, industry has developed at an explosive pace since 1985, with over 377 new industries added to Samut Prakan Province in 1988 alone and an accompanying investment of 70 billion baht. In addition, land used for industrial purposes has grown from 17,687 rai in 1970 to 27,870 rai in 1989.
- Industrial development patterns clearly follow infrastructure development. This has led to "ribbon-type" industrial development, induced by road construction.
- Industries are currently concentrated in two districts of the province: 1,156 industries in Muang district, and 1,106 industries in Prapadaeng district.

- The conversion of land from rice paddies to other uses has also been dramatic. Rice paddy land has fallen more than 64 percent since 1971—dropping from 397,885 rai in 1971, to 142,945 rai in 1989.
- Aquaculture, now consuming 46 percent of the land, has displaced agriculture as the largest land use in the province.

Economic Considerations

- Land use is based on many factors. While 40 percent of the land in Samut Prakan is suitable for rice paddies, only 22 percent is now used for that purpose.
- Given its land requirements, income from industry contributes a much greater proportional share to the Gross Provincial Product (GPP) than does agricultural income. Figures show that industry, while using only 4.4 percent of the total land area, accounts for 52 percent of GPP. Agriculture, using 73 percent of total land area, now accounts for only 5.5 percent of GPP.
- While some industrial growth has been at the expense of agricultural land, a far more significant change in terms of total land usage has been the extensive conversion of rice paddies into fish and shrimp ponds. Conversion to industrial use, by contrast, accounts for no more than 4 percent of the lost paddy land.
- Based on a 400-sample survey, figures indicate that median land prices for the province, as established by the Department of Lands, are currently only 30 percent of actual transaction values.

Environmental Considerations

- Tap water supply for the province is too low to meet the demand. As a consequence, 3,400 wells pumping 388,316 meters a day from the underground water aquifer are now in use, causing ground subsidence of 5-10 centimeters per year, as the aquifer is depleted. A significant part of the province also possesses clayey soil, which will require up to 20 meters in deep foundation pilings to safely support building construction.
- The government's flood protection embankment plan mainly encompasses the province's coastal areas. Industries situated in other areas, although not flood-prone, will have to rely on their own individual protective measures.
- While pollution levels and traffic congestion were not directly measured in this study, informal comments from residents and analysts' observations indicate major increases in these problems, with little private investment being made to alleviate them.

Land Use Regulations

- Because of the dramatic changes that have taken place since the Department of Town and Country Planning developed its land use plan in 1984, that plan now shows little relevance to the development patterns that have since emerged.
- The original plan failed to take cognizance of the major impact of economic forces and infrastructure—primarily, roads—in influencing property values and consequent development patterns.
- While the original plan recognizes the problems associated with unplanned development, it fails to recognize and adequately address the significance of economic forces in promoting land use change.
- The land use "Greenbelt" concept put forth by the DTCP is very similar to those proposed for many Western cities, most of which have been unsuccessful because of their failure to adequately reflect economic forces and community values.

While it is evident that the problems are serious and that Thailand cannot rely entirely on market forces to guide its land use development, it remains very questionable whether zoning by itself will bring about the desired improvement. For example:

- Lack of infrastructure (roads, water, sewerage, and environmental controls) is a major problem, yet land zoning provides no revenue to increase the infrastructure.
- High land prices are a growing problem, yet reducing the land available for housing and industry will

only increase competition for the remaining construction sites and will thus increase prices.

- Due to the extent that zoning decreases the price of agricultural land near urban areas, it basically constitutes a subsidy for the least productive sector and a penalty for the most productive sector.
- Lack of environmental controls is a major problem, yet zoning does nothing to increase the investment in pollution control. In fact, the resultant increase in the amount of land with questionable tenure (because of nonconforming land use) will actually reduce the incentive to invest in improvements.
- Excessive ground water pumping is a major problem; yet zoning does nothing to increase the supply of tap water and may actually increase the ground water pumping on parcels that remain open for development.

POLICY ISSUES

The observations and questions raised above indicate a number of issues regarding equity, market forces and long-term effectiveness. Arbitrary zoning, which ignores economic values and the role of infrastructure, actually constitutes a transfer of wealth from those on one side of a line to those on the other. Failure to adequately address these issues will lead to tremendous pressures to grant favorable rulings to particular land-owners and will ultimately lead to the failure of any land use controls. Major policy issues include the following:

- Are land use controls necessary, and if so, what form should they take?
- Given the history of Thailand's development, as well as that of most developed countries, is it realistic to expect that land can (or should) be reserved for agricultural use if significantly higher economic and employment benefits can be obtained through allowing its conversion to other use under appropriate supervision?
- To what extent does the current absence of environmental controls, betterment levies, and effective property taxes constitute a subsidy to irresponsible industries and a penalty to responsible industries?
- Are there appropriate mechanisms—such as transferable development rights or development impact fees, which can supplement the zoning in order to make it a more equitable and more effective tool for guiding development?

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