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FOCUS: Planning and the Water Cycle: Open Seas to Urban Pipelines

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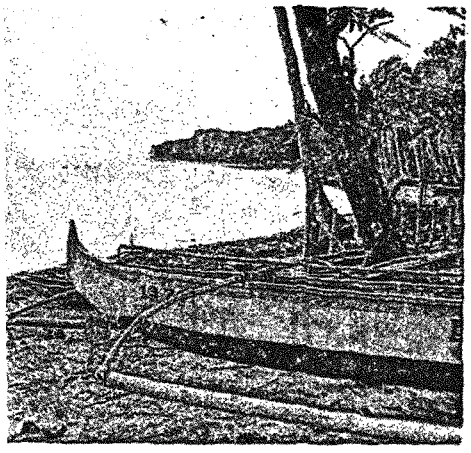
TABLE OF CONTENTS

EDITORIAL

Planning and the water cycle: Open seas to urban pipelines

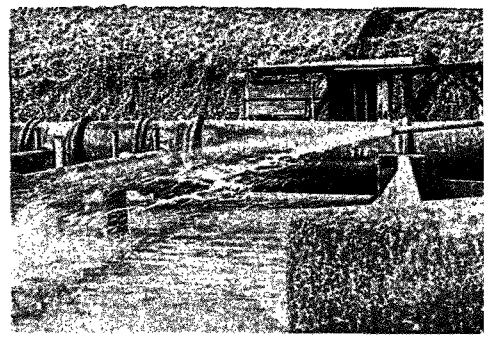
Late 1976 brings us all in view of yet another milestone in the progress of the Institute. Very shortly now, the first two-year cycle of the new graduate course will be completed and the Institute will bring into the professional world its first batch of graduates under the new program: Master in Urban and Regional Planning. At the same time we can detect a slight note of inconsistency. The Institute still retains the name of "Institute of Environmental Planning"; a name apparently selected for its compatibility with the degree originally granted—Master of Environmental Planning.

This seems, therefore, to be the appropriate time and place to clarify certain misconceptions concerning the name and functions of the Institute of Environmental Planning. The term "environment" was used in a rather special sense when the Institute first opened its doors to graduate students for the Master in Environmental Planning program in 1968. At that time the subject of "Environmental Planning" was conceived as being the physical, economic and social study of man in the environment of his settlements whether they were urban as in Metro Manila or rural as in some remote barrios. Since then, however, the term "environment" has acquired the somewhat narrow and specialized connotations of pollution control, ecology, and resource conservation which have mostly served to focus a concern upon wildlife, plants and inanimate objects in nature rather than on people and their communities. Indeed, the present title of the Institute has even led some visitors to believe that the faculty are a corps of biologists, ecologists and specialists in wildlife management.



There are, on the other hand, persons to whom the terms "environment", "ecology" or "conservation" are anathema. Such people equate this vocabulary with the extremists (most vocal in the U.S.A.) who would seek to prevent and prohibit each and every developmental activity which could create any impact even in the form of a most minor stress on any part of the natural environment. They adopt the extreme view that conservation should take absolute priority over development. A philosophy which, we feel, is quite untenable and inappropriate in a developing country.

Happily, there is a vast middle ground of opinion on this subject, to which a growing number of urban and regional planners now subscribe. They believe that the best way to respect the natural environment is first to seek a better understanding of it and then to modify, or manage it for social and economic betterment



in a manner which creates the least amount of permanent or irreversible damage. Indeed, we must all accept that *some* modifications of the environment are absolutely essential for the continued survival of the human race upon the planet.

Next year, it seems most likely that the Institute will have yet a new name, hopefully one more explicitly related to the totality of its functions. So before another change in nomenclature takes place we dedicate this issue to the theme of "Planning and the Environment". More essentially, it could be expressed as "Planning and the water cycle: Open seas to urban pipelines"

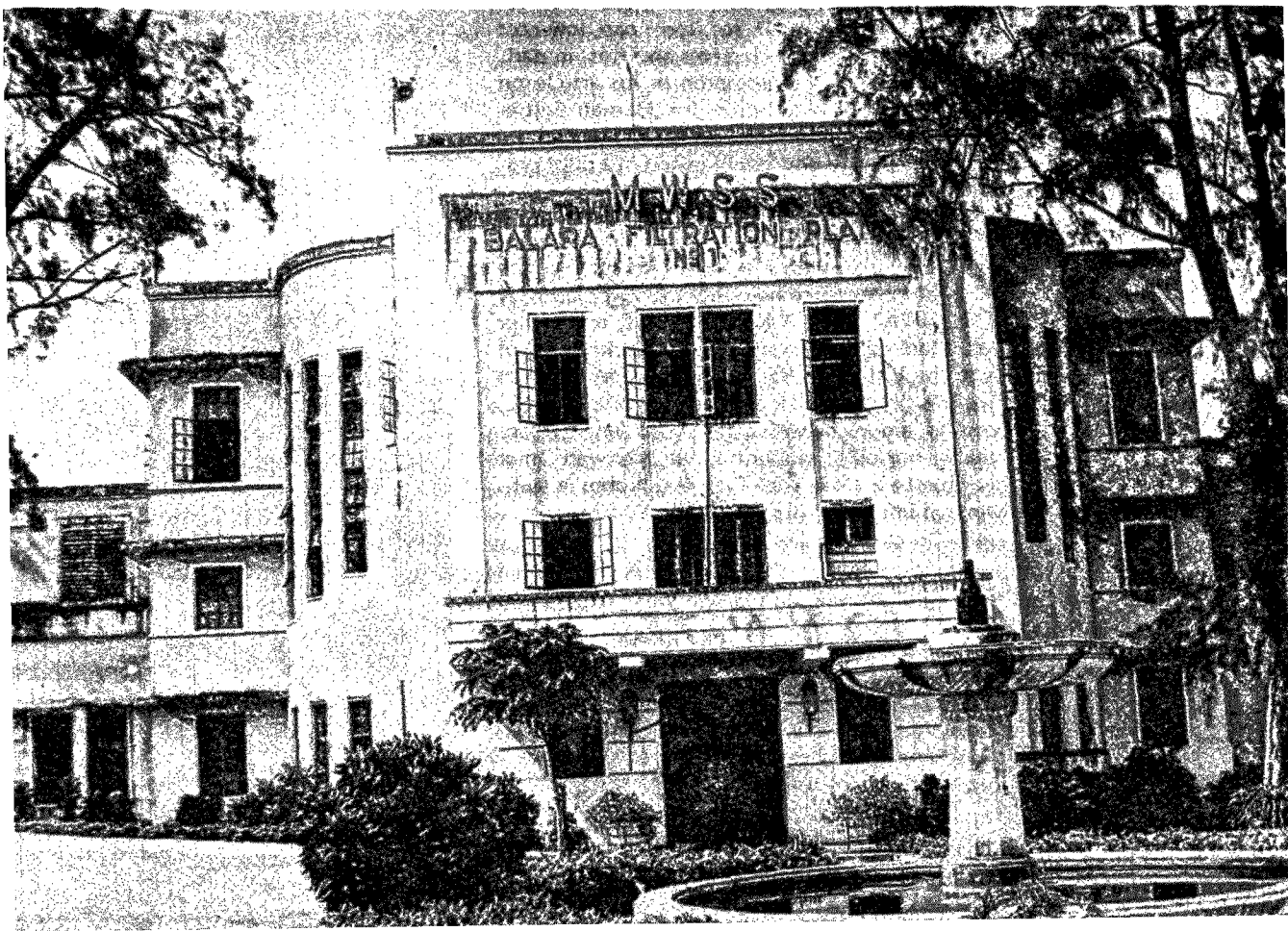
This issue starts, therefore, with a contribution by Dr. Alan Rew on access to the urban water supply with special reference to Metro Manila. The need for an adequate and pure urban water supply, incidentally, was pinpointed by Dr. Barbara Ward as the basic priority of urban development in the Third World at the recent Habitat Conference in Vancouver. Turning into the wider geographic setting of the Philippines as a whole we consider next the role of the marine environment both as a setting and as a series of restraints and opportunities for urban and regional planning. One of the key items of public concern with the coast line is that of access and in a concise yet comprehensive form Professor Santiago summarizes the legal highlights of this subject. Moving inland from the water's edge, Mehretab Tekie explores the subject of forest management and conservation in a form which should be of interest and value to regional planners.

If forests can be better managed so, too, can low-cost housing and their related water supply systems and this, in part, is the theme developed by Bruce Etherington in his article on "Eco-Settlements: An Alternative Solution for Human Settlements". Of special interest is the fact that the experimental designs of Professor Etherington are now being tested in a pilot project at Antipolo.

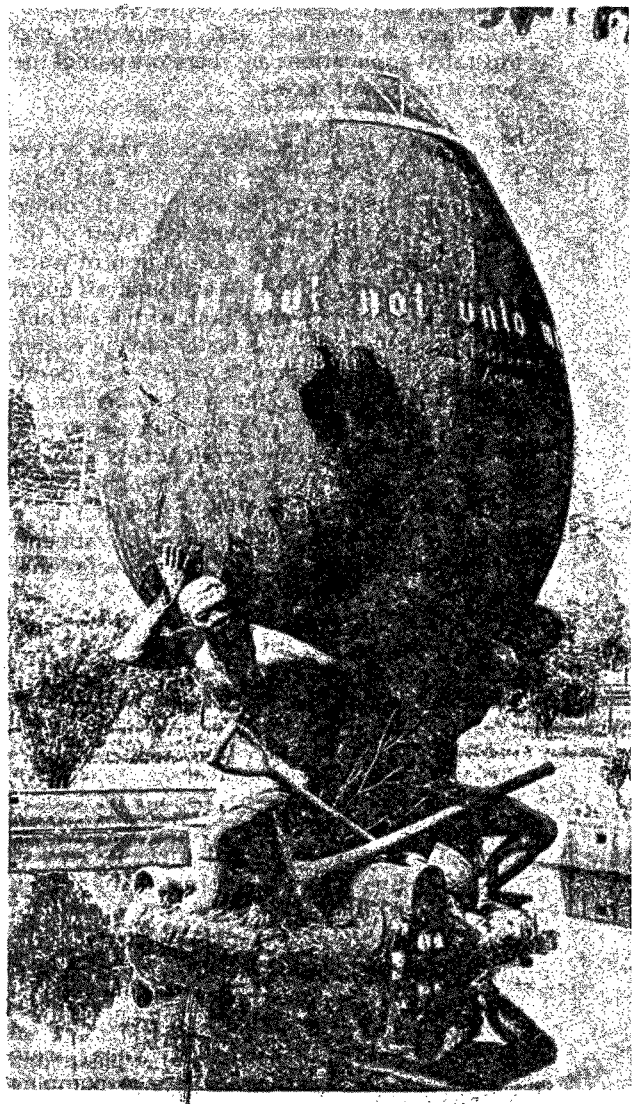
Dr. J.C. Benitez, Executive Director of the Human Settlements Commission, provides us with a summary of some of the highlights of the Habitat Conference held in Vancouver last May under the title of "HABITAT 1976: A Report". Next, one of our student editors, Ms. Marissa Pablo contributes a book review of a recent addition to the Institute's library which is pertinent to our theme. This work is "Planning for an Urban World" by R.L. Meier and is concerned, among other matters, with "energy conserving cities". Finally, our other student editor, Maxwell Omar Espina, brings this issue to a close with Planning Notes, a summary of recent events of interest to planners in the Philippines.

W.B. Paterson

Access to Urban Water: Social and Institutional Dimensions of an Environmental Issue



Alan Rew



Consumer complaints about the provision and efficiency of public utility services may often have an exaggerated quality because they are based, almost by definition, on a partial perspective of the issues of investment, financial management, revenue generation and collection involved in a complex organizational and technical undertaking such as a public utility. The angrier and more demanding the complainants become the more will officials concerned with handling those complaints begin to feel that the complaints are exaggerated and ill-founded, particularly since delays and unsatisfactory service will often lead to unreasonable accusations of corruption and inefficiency.

Sensationalism is an easy target for officials' criticisms since it so often detracts from a balanced appraisal of the set of events at issue. "Balance" in an evaluation, however, depends on access to "full information" and this is often hard to come by. Thus, it would be unwise to dismiss the heightened emotions often associated with consumer demands for better public facilities as simply partial and sensational. However ill-founded and unreasonable, or well-founded but exaggerated, the complaints are they *are* nonetheless part of the social environment within which public servants must learn to operate in order to harness the physical environment to productive and domestic purposes. One study of water services in Bangkok, Thailand in 1969, for example, reports that the high level of public concern and complaint about the inadequacy of water services and the level of inefficiency and corruption in its management was feared as a possible political threat to the government. [1]

This paper is concerned with the important social and institutional dimensions involved in access to urban water. We tend to think of access to water services as such an eminently physical aspect of our environment, yet there is far more involved than purely engineering considerations would suggest. Consumer demands are treated in this paper as part of an overall process of institutional access and allocation involving social, administrative, economic and engineering aspects. These interrelate in ways which may make the efficient provision and distribution of water rather more intractable and difficult to manage than the purely engineering, purely economic, or purely social perspectives would individually suggest. Access to a resource through the rules,

[1] Noranitipadungkarn, Chakrit, 1976 "Bangkok's Metropolitan Immediate Water Improvement Program" in *Implementation: the problem of achieving results—a casebook on Asian experiences* edited by Gabriel U. Iglesias. An EROPA publication.

controls and eligibilities of a public bureaucracy is involved and complaints and frustrated applications are therefore part of the overall pattern of access.[2]

A number of complaints about poor access to water are selected for discussion and these lead to a discussion of the institutional context within which they are imbedded. Most of the illustrations concern the distribution of water in Metro Manila, but the overall analysis ought to have a wider relevance both within and outside the Philippines. The water service system in Bangkok, for example, appears to be identical at certain points to the system operating in Metro Manila. The Metro Manila case is especially interesting because poor access to water is not a reflection of relative drought conditions as in many other countries, but of a complex web of previous under-investment, management practice and access expectations.

Shortage Amid Plenty

As Typhoon Didang, and its torrents of rain, and other natural disasters (such as tidal waves) have swept the Philippines during 1976, it is a sad irony of the physical and social environment that areas in the Philippines should display this super-abundance of water and yet still have insufficient drinking water. Several newspaper reports have emphasized this irony. For example, three weeks after Typhoon Didang had devastated a wide area of Luzon, including Metro Manila, it was reported that awardees and homeowners in a public housing project called Urduja Village at Novaliches on the outskirts of Metro Manila, were complaining that the project's two pumping stations had broken down at the height of the typhoon and that they had no piped water since then. Residents blamed officials of the National Housing Authority (NHA), the government housing agency managing the housing project, for their failure to remedy the water crisis immediately[3] despite the fact that NHA had only recently inherited the project from PHHC, its now defunct predecessor.

Residents of the town of Novaliches itself had been complaining, one month earlier (and before the typhoon), that they had no water despite the town's close proximity to the major water reservoir of the Metropolitan Waterworks and Sewerage System (MWSS) at La Mesa. The Novaliches area is extensive and booming with perhaps some 80 subdivisions and housing projects and 40 factories now located there. The La Mesa Dam, moreover, has a water delivery capacity to Metro Manila of approximately 238 million gallons per day. These two facts of a large-scale demand for water and, at the same time, a potential large scale source of supply near at hand could only have heightened the irony and frustration of the situation as residents continued to draw their water from faucets provided by some industrial plants in the area. These faucets would also, most likely, be supplying artesian water since only some 7% of all industrial establishments in Metro Manila take their water from the MWSS due to the unreliability of supply. The Novaliches residents were solely dependent on ground water, then, and yet were within sight of the Metro Manila water reservoir. It is reported that one barangay captain in the Novaliches area and a member of the Quezon City Sangguniang Bayan, complained to the newly appointed Mayor of Quezon City that water supply was the second most pressing problem for the area's residents after the poor state of the roads. He is quoted as saying: "The situation now obtaining in Novaliches is like that of a rich man who owns a big swimming pool, but cannot take a much-needed bath." The newspaper article concludes by describing the queues of residents waiting to get water for drinking, cooking and other home consumption purposes from the faucets of factories in the area.[4]

In November 1975, some 14,400 families (numbering in total some 78,000 persons) and scattered throughout the 18 barrios of the municipality of Taguig, Rizal were reported to have been suffering from an acute shortage of drinking water. Indeed, of the 18 large barrios comprising the town, only eight were supplied with water coming directly from the two MWSS pumping units and, furthermore, one of these units stopped working in November because the well was dry. The Mayor of Taguig is

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[2] Schaffer, B.B. 1972 "Easiness of Access: A Concept of Queues." Institute of Development Studies, Communication Series. (Sussex, England) also "Access to Public Services" (ed.) B.B. Schaffer *Development and Change*, Vol. 6, No. 2, 1972.

[3] *Bulletin Today*, 16 June 1976.

[4] *Bulletin Today*, 9 May 1976.

reported as saying that the pumping unit could not supply sufficient water to even the immediately adjacent barrios. It was a common experience to find that the well had dried up during the dry season and could not be used at all for a period of three to four days. The ten barrios not served by the MWSS pumping units were totally without water unless alternative sources of supply could be found.[5]

It is not only the absence of water connections, however, that is at issue in the irony of undersupply. Even where there are water connections, and no overall shortage, there may yet be an acute shortage of water because of leaks in the distribution system. In March 1976, for example, some 5,000 residents of one street in Pasay City complained that their water supply was not potable forcing them to use other sources. Their water was contaminated because the distribution points leading to their area had been broken since 1972, but had not been repaired despite their repeated requests. They were forced to use a well as a secondary source but even this, they feared, was contaminated by drainage water. They claimed there had been established cases of cholera since they started getting water from the well and that one resident had died of the disease. Residents headed by Sangguniang Bayan members had requested the Mayor of Pasay City to argue their case for the immediate repair of the pipe with MWSS.[6]

Another factor contributing to the absence of water in the water mains is the practice of connecting booster pumps. This might ensure adequate supply where the connection is made but it is to the detriment of consumers further along the distribution line. There have been suggestions that the current absence of water in areas of Makati (a municipality in Rizal province otherwise noted as a rich, planned suburb with high-class facilities), for example, is due to the use of pumps in the high-rise buildings and condominiums of the area in order to increase their own water pressure. Residents of one area of Makati were complaining, in April 1976, that their faucets had dried up more than a year before, so that they now had to draw water from deep wells—and that there were very few of these in the area:[7]

Something of the intensity of dissatisfaction with the water supply is indicated in a report on the situation in Tondo. Mary Hollnsteiner reports that Tondo residents viewing their physical environment in Magsaysay Village were dismayed over the inadequacy of water and electric lighting facilities. Nearly three out of five said that these inadequacies were the first-ranked problem for them. Only one in ten of the households surveyed in that study used artesian well water. Water for drinking and cooking was obtained from faucets of the adjoining city slaughterhouse, from the nearby Vitas multi-storey tenement, or from MWSS pipes in the vicinity. Laundry was usually done at the well or faucet sites in order to avoid buying cans of water from enterprising local vendors. The shortage of piped water in the area contributed directly to the residents' sense of dismay and, moreover, to the poor environmental conditions arising from the stagnant water and the lack of adequate drainage around the faucets and well areas.[8]

It must be emphasized that complaints about inadequate water service are not unique to Metro Manila or to households in poor communities. One complainant from Tagaytay City argued that inefficiency in the distribution of water was harming the tourism industry as well as local residents.[9] Serious deficiencies in the Davao City water service system have also been described by the water district's own general manager.[10] The provisioning of ships with water at Manila's ports and harbours has also, until very recently, emphasized the point that inefficiency or undersupply in the distribution of water affects productive establishments as well as domestic users. At times, the supply of water to ships at berth, and even to the thousands of stevedores and pier laborers, has been critical. There are even reports that efforts in the past by pier hands to get ahead of

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[5] *Bulletin Today,* 29 November 1975.

[6] *Bulletin Today,* 5 March 1976.

[7] *Bulletin Today,* 19 April 1976.

[8] Hollnsteiner, Mary Racelis, 1975 "Metamorphosis: From Tondo Squatter to Tondo Settler" *Ekistics,* September 1975.

[9] *Bulletin Today,* 6 April 1976.

[10] *Bulletin Today,* 6 February 1976.

others in obtaining drinking water had led to fights and to subsequent killings. The situation improved in 1975, however, when a group of private businessmen formed the Harbor System and Supply Incorporated (HSSI) and installed almost 14 kilometers of underground piping in order to service 15 large shipping companies who, between them, were operating a total of some 80 vessels.[11]

These anecdotes, reports and observations serve to establish the fact that in some areas of Metro Manila, residents are highly dissatisfied, if not dismayed, at the shortage and uneven supply of water. These reports and observations, do not, however, establish the reasons for that under-supply although there is often a hint that poor public utility management may be at fault. One newspaper article of April 1976, for example, argued "whenever water stops coming at the faucets, people immediately accuse the government water agencies of the deficiency. Seldom, if ever, do people think of the supply and demand situation of water."

The rest of this paper will examine some of the reasons for this under-supply and will pay particular attention to the interrelationship of social and economic dimensions in the distribution of water. It will be argued that while investment to increase the aggregate supply of water is critical, investment *in itself* is unlikely to cure the problems reported in the previous section. Social expectations about the supply of water and economic factors are interrelated within an overall system of institutional allocation and access which makes the development of the system somewhat more intractable. This very intractability provides a benchmark from which to assess the appropriateness of certain prescriptive solutions.

Aggregate Supply and Investment

The adequacy of the overall supply of water is clearly crucial in any discussion of water service distribution. Any current "adequacy" in overall supply, moreover, is jeopardized by increases in population and by increases in average per capita consumption. The consumption of water in Greater Manila has been increasing steadily in recent years. A Department of Natural Resources report, for example, recorded that in the six-year period ending 1975, domestic water consumption in Greater Manila increased by 47%. The increase in population during the same period was only 25%, with an average *annual* increase in water consumption of 7.7%. The average annual increase in water consumption for the industrial sector of Greater Manila was 18%; the commercial sector increased its consumption by 13%; and the government sector increased its consumption by 12%. With these increases, the same report went on to describe the water supply in Greater Manila as critical.[12]

Again, however, the reasons for this crisis need careful examination. Thus, at the very same time that there were complaints (in the Manila newspapers) about water distribution at the height of the dry spell in mid-1976, MWSS officials at La Mesa Dam reported that the water reserve at the Dam at that time was still more than adequate to meet the needs of water consumers in Metro Manila and the neighboring areas during the remaining summer months. Although the water level at the dam was 5.8 meters less than the normal level, nonetheless, the level was still 9.2 meters above the critical mark at which the dam is said to be at "dead storage level" and water cannot be released by gravity flow alone. At the "dead storage level", water must be pumped to the filtration plant at Balara in Quezon City. During the summer periods of the mid-1960s, Nawasa (the predecessor of MWSS), often had to pump water from the dam; however, there was no indication that this would be necessary in 1976.[13]

Equally surprising, in view of the overall shortage of water, has been the abandonment or non-repair of deep wells previously used to augment the MWSS supply. It is thought, for example, that 74 wells were working in the area in 1967 but that only 22 wells existed in 1976

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11 *bulletin Today,* 28 June 1976.

12 *Bulletin Today,* 1 April 1976; and Department of Natural Resources *Inventory of Philippine Natural Resources,* Quezon City, 1976.

13 *Bulletin Today,* 4 May 1976.

and some of these, moreover, were in a bad state of repair.[14]

Furthermore, an authoritative study of water supply and water resources in the Manila Bay Region reported in 1971 that there was a total water potential supply in the region of about 30 billion cubic meters a year, which, at that time, was 35 to 40 times the region's need for domestic water. The annual surface water supply potential within the region was estimated at 21.5 billion cubic meters, assuming that the surface water supply potential was one quarter of the rainfall count. To this figure, an additional capacity of 8.6 billion cubic meters could be added as an estimate of total ground water resources.[15]

Wastage, through leaks in the pipes, could account for part of the shortage in several urban areas. The General Manager of the Davao City Water District, for example, has claimed that only one-third of the three million gallons supplied is used by consumers in the district. The remaining two million gallons either run out through leaks in the pipes or are illegally pumped out by private persons for commercial purposes. Thus only 33,000 persons are being served in the Davao City district despite a capacity to serve 100,000 persons.[16] Leaks in the Manila area are thought to be principally in the secondary distribution network. According to a 1969 report commissioned by the Government of the Philippines, about 40% of Manila's streets (600 kilometers) were without water mains. Moreover, the small size of the pipes in these secondary networks, and the networks' many illegal connections and leakages tend to cause negative pressures which then expose the system to pollution hazards from contaminated water flowing into the distribution system.[17]

The same study reports that "little has been done to implement the recommended year to year upgrading of the secondary system, and in many areas, two and three inch diameter lines are common." Low pressures in the secondary system, in turn, encourage residents, in a search for higher pressures, to connect directly to a primary main with a small diameter line, frequently laid without cover, in a drainage ditch polluted by waste water. "In areas where negative pressures in the main are prevalent, the potential health hazard due to this practice is most serious."[18] It should be noted that these areas of negative pressure are likely to be areas of poor supply in the poorer parts of the city.

Investment in water supply and in the distribution system is clearly needed in order to correct these deficiencies. Fortunately, mid-1976 also saw the signing of an agreement between MWSS and financial and consulting groups designed to implement the long-range water improvement programs which have been drawn up. A loan agreement with the Asian Development Bank for the development of the water system had been secured as early as 1974. In mid-1976, an agreement was signed with a Boston-based engineering-consulting firm to implement schemes under the loan agreement as early as possible. A program of construction is scheduled for completion in 1979, and this will increase water supply in the Greater Manila area by 240 million gallons per day and should meet water demand requirements up to approximately 1980. At the same time, feasibility studies are being undertaken to ensure the supply of water after that date. Plans are afoot for impounding water near the mountainous area of Montalban, Rizal and studies are being undertaken in order to integrate these plans with long-term plans for the development of Laguna de Bay, 20 kilometers southeast of Manila.

Laguna de Bay holds some 2.5 billion tons of water, making it one of the biggest freshwater reserves in the whole region. Tapping this potential source of freshwater for Metro Manila, however, involves a number of problems, most of them serious. One of these problems includes saline water (especially during the dry months) and industrial and human waste pollu-

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14 Institute of Environmental Planning, University of the Philippines, Quezon City, 1976. "A Study on Water Supply and Water Purity" by Lopez, Eric and others. Report for Planning Class 221.

15 Institute of Environmental Planning, University of the Philippines, Quezon City. *Manila Bay Metropolitan Framework Plan,* October 1971.

16 *Bulletin Today,* 6 February 1976.

17 Black and Veatch (Consulting Engineers) 1969 "Master Plan for a Sewerage System for the Manila Metropolitan Area." Final Report prepared for the World Health Organization. Manila, December 1969.

18 *Ibid.*

tion flowing into the lake because of high tides in Manila Bay. The development of the Lake is being undertaken with a loan of some $27.5 million from the Asian Development Bank.

Clearly, the issue of aggregate supply of water is crucial to the solution of water deficiency in Metro Manila. Large-scale financing is necessary for this development and with its procurement in recent years, residents of the area can clearly expect an improvement. Investment in the distribution system and correction of its deficiencies, however, is also required. Yet even if funds are available, both for improving the aggregate supply and for the improvement and extension of the distribution system, more is involved than the availability of funds. In a situation where there are competing claims on types of physical infrastructure development, and where national decisions have to be made in order to allocate funds to roads, tourism, housing, water and other sectors of service, it is clearly important to secure funds first in order to improve the water supply. But it is equally important to note that there are other issues involved in both the distribution of water and the ability of households and establishments to gain access to it. These may make the long-term solution more difficult to realize than it would appear at first glance. Availability of funds is, perhaps, the first step but it is by no means the last one.

Management, Personnel and Billing

One of the more intractable issues involved in the distribution of water in Metro Manila is the low level of billing activity. In 1969, more than half of the treated water sent into the distribution system was not accounted for by water meters, and therefore could not be billed, and nearly 30% of the charges billed for water were not collected.[19] Thus, nearly two-thirds of its product brought no economic return to the system.

These overall figures are confirmed by the fact that existing meters in one government housing project in Quezon City recently are thought to have registered only some 29% of the total water supplied to the project. The provision of new water meters immediately led to the doubling of registered water consumption. This tends to suggest that faulty water meters are in large part responsible for the low level of billing. One estimate has it that about 50% of meters in the system are defective, at any one time. One official stated recently that most MWSS meters in Metro Manila are defective and that they have been the cause of consumer complaints. A water meter of a new design has now been ordered; and 145,000 of the new type of meter will be purchased by September 1976 to replace defective ones. An additional 145,000 units will be purchased two years later and within 4 years, all defective meters are scheduled to be replaced.[20] Until their replacement, billing will be on an average consumption basis for residential use and a fixed rate basis for commercial and industrial consumers. It is worth noting, however, that the implementation of water meter repair and replacement is particularly difficult to achieve. A crash program in meter repair and replacement within an overall water supply improvement program for Bangkok encountered many obstacles. Nearly two years after the original, recommended, target date for the repair of 120,000 units, only 12 percent had been repaired and the original recommended budget had been all but exhausted.[21]

"Most of Metro Manila's water meters are defective."

MWSS's categories of accounting may also contribute, to some extent, to the confusion in billing. The latest MWSS annual report, for example, breaks unbilled water down into two categories: 30% of water is listed as "accounted for but unbilled", while 20% is recorded as "unaccounted and unbilled." It is not immediately clear why the 30% which is supposedly accounted for remains unbilled, although this may reflect, in part, the level of delinquency in the system. One estimate has it that of some 350,000 services probably 15% (plus or minus 15%) are delinquent at all times. Another

19 *Ibid.*

20 *Bulletin Today,* 12 July 1976.

21 Noranitipadungkarn. C. *op. cit.*

10,000 services are permanently closed because they are delinquent; another 40,000 are temporarily closed; and perhaps another 50,000 have nonfunctioning water meters. With 10% of water continuing to go to the government sector, and therefore unbilled, it would be something of an achievement if the system could reach even a 65% billing rate resulting in only 25% financial loss for the total amount of water supplied.

MWSS's need to generate more revenues and to increase the percentage of billed water has prompted it to take increasingly stricter measures against delinquent consumers. These measures have inevitably led to complaints from consumers who feel they have been overcharged under the new rating system. Where meters are found to be defective, for example, the new basis of billing becomes the estimated average water consumption of the household. The basis of these estimated averages, however, is not always immediately clear. This has led some consumers to claim they are being grossly overcharged; others to complain that they have been rebilled for bills already paid; others to complain that they are being harassed to pay bills left outstanding by previous tenants of their apartment or house.

There is thus instituted a vicious circle thwarting management's efforts to improve the delivery of water. The inadequate level of funding, or non-funding, of long term development programs until just recently, and the consequent non-implementation of approved projects for the improvement, or extension, of service lines had led, in turn, to consumer dissatisfaction. MWSS's attempts to enforce stricter measures in the billing and collection of water then leads to further delinquency and to further protest.[22]

Residents no doubt appreciate the need for water authorities to develop sources of revenue in order to improve and extend the water supply system. Nonetheless, they argue that their payments have not previously been used to that end. Residents of Urduja Village, the old PHHC project near Novaliches, for

Providing adequate water meters requires the recruitment and training of people to read them correctly.

example, are said to have been paying "almost ₱9,000" (although, in fact, more like ₱8,000) every month to the project management for water alone for several years. Each family, that is, had been assessed a flat rate of ₱16 per month as a fee for using the project's *internal* water supply. The annual collection, if all 480 resident-homeowners paid, should, in fact, be in the region of ₱93,000. The residents claim that with the monthly collections, there should be no reason for the total failure of the project's water system. Sufficient finance is available, they argue, to ensure adequate maintenance and service.[23] A problem here may be that funds collected for water supply and to meet the initial capital costs of construction of the water system are diverted into the general fund of the project and not kept specifically for the maintenance of the water system. Ultimately, then, the problem is not only one of finance and investment in water services, but also a question of the implementation and management of water services.

The provision of adequate water meters and recruiting and training the people to read them correctly is one crucial link in the chain of revenue provision, billing and supply. The basis of payment for the MWSS bill collector may contribute to the vicious circle we have seen arising in the administration of water and householders' access to it. The MWSS bill collector is paid ₱0.15 for every collection he makes. If he collects an average of 72 to 80 bills a day, then he is paid from ₱10.50 to ₱12.00 a day. Since piece work is, in essence, involved, the collector can only improve his income by working longer. Aside from his commission, the collector is paid a monthly transportation allowance plus a ₱50 living allowance. His average earnings are thought to be around ₱350. However, to qualify for the job, a collector must put up a ₱3,000 bond. This has to be in cash.

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[22] Interagency Committee on Metropolitan Manila *1973 Metropolitan Manila Authority: A Development and Reform Strategy Proposal*, Govt. Printing Office, Manila.

[23] *Bulletin Today*, 16 June 1976.

Reforms by the MWSS ought to be able to remedy at least the grosser aspect of the situation.

The MWSS bill collector fares badly compared to bill collectors in another comparable utility, Meralco—the electricity supply undertaking. Meralco bill collectors receive a basic pay of ₱600 a month plus commission. Their bond is limited to only ₱2,000. Furthermore, it is claimed, the payment of the MWSS bill collectors' earnings is often delayed, often by as much as three months. Furthermore, MWSS collectors are not entitled to the usual vacation and sick leave, nor are they entitled, as other members of the government service are, to government service insurance or social security benefits. They have no tenure of office and, it is reported, there are gross inequities in the distribution of territories in which collectors work. Favored collectors are, supposedly, given choice assignments which ensure large aggregate collections and, hence, larger commissions.[24]

With such a system of remuneration, the MWSS bill collector has little interest, presumably, in the efficient and equitable collection of monies due from the water supply. It is in his interest simply to maximize the number of collections he can make everyday. Consequently, he is likely to avoid returning to a known delinquent account on more than one or two occasions, since it is not in his own financial interest to do so. At the same time, he will tend to increase his collections and/or leave himself more free time if all billings are on a fixed, average billing basis. It is not, therefore, in his interest to report defective meters.

Even here, however, it is not just a question of finding funds to increase the pay of collectors in order to improve their conditions of service. Nor is it just a question of altering the manner in which they are paid, though that could well be very important. The administration and management of access to water involves *systematic* issues, in which the established expectations held by users about officials and by officials about users are related in complex ways. Simply searching for weak links in the chain of management and for categories of persons at fault is unlikely to uncover the roots of the problem involved. One influential report, for example, argued of the old Nawasa, that it:

> "operated more like a government bureau than a successful public utility. It does not fall under Civil Service regulations which would tend to foster technical competency and advancement based on merit. It is subject to political pressure which interferes with sound management procedures. Tardiness, absenteeism, poor discipline, and general lack of attention to work are among the personal problems."[25]

Reforms by the new MWSS in the area of personnel management, billing and public relations ought to be able to remedy at least the grosser aspect of that situation. But even these will be inadequate for the rationalization of water allocation and access if they fail to take into account the systematic nature of the relationship between the administering organization and the patterns of access already established by past consumers and potential consumers. The following case study, which is a composite of several real-life situations, illustrates the point concerned.

Access in Practice: A Composite Case Study

Five families in a subdivision in one of the four central cities of Metro Manila decided they would like to improve their own water supply by securing connections to the MWSS system and to abandon the shallow wells previously sunk on their lots. There was no water line within the subdivision and they wanted, if possible, to connect to the main line on a major city street some six city blocks away and not to a smaller diameter line which was some two blocks closer. (It was reported that around that time, another home owner in the area had spent nearly ₱20,000 in materials, labor and fees to secure his own individual connection.) In order to avoid delay or queueing in the in-

[24] *Metropolitan Mail,* Quezon City, 12-18 January; 29 March-4 April.

[25] Black and Veatch, *op. cit.*

Authorities attempt to control allocation of water services while consumers attempt to lessen the impact of these constraints to gain access to water.

stallation of the connection, and in order to save money, they went ahead and tapped the MWSS line without a permit or authority. They did so on the advice of a friend of the family who said they should make the connection first and then declare it later while at the same time applying for the MWSS's amnesty on illegal (colorum) connections. By making it appear that the connection had been there for some time (and before the declaration of Martial Law), their connections became a "special case" governed by rules which ensured that the connection would be legitimized more quickly than average normal applications. Each family was penalized—at the rate of ₱1.00 per person per month for each month of the connection's future existence—and, for each family, the total penalty was around ₱300. At the same time, *any* person (except an employee of MWSS) who provides information leading to the discovery of an illegal connection is encouraged to claim a reward from MWSS which would range, in the cases above, from one-half to two-thirds of the penalty fees collected from the erring consumers. So, an enterprising person could arrange matters so as to have water immediately, have the connection legalized quickly, and pay only a small discounted penalty in doing so, although at the likely further cost of compromising himself and the MWSS official who would have to be convinced of the "facts" of the case. The total cost of the connections for the five families—including materials, labor and fees—was around ₱30,000. Eighteen thousand pesos were used for materials alone. Each 20-feet length of pipe, for example, cost around ₱165.00 and 1,650 feet of piping was needed. The total cost per family was around ₱6,000.

The irony of the case, and maybe of others like it, is that it is both expensive and based on a false assumption. The families spent more money on materials and labor than was strictly necessary in order to connect to a larger diameter pipe and, as they thought, to ensure a greater pressure of water in their faucets. They could have connected to the somewhat closer secondary line and have saved money. Had there been an existing distribution line on their street, they would each have had to pay only one-tenth to one-eighth of their individual costs in this case.[26] As it was, they chose to connect with the nearest main. In their haste to queue-jump, however, and get the best available pressure in the shortest time available, they overlooked an important fact. This is that any difference between the main and the secondary line alternative would be offset by the extra friction caused by the additional length of small diameter pipe. The only perceivable advantage in connecting to a main would be that the main could be less susceptible to damage and might be repaired faster than the secondary pipe; but even then, this advantage might well be offset by the long, exposed and vulnerable length of piping necessary to make the connection. The connection is also ironic from the point of view of the water system as a whole since a device instituted to control the system leads, in fact, to a further proliferation of uncontrolled, secondary networks."Spaghetti"is the term used by water engineers to describe these extended small pipes which often run along the through drainage and waste water ditches.

These ironies for the organization and the families concerned illustrate the point that there is an ongoing system of adjustment and response concerning the institutional rules and eligibilities through which individual consumers are led to seek access to controlled resources. Water authorities attempt to control and police the allocation of water services and the individual families attempt to minimize the impact of these constraints on their own attempts to gain access to water in the face of scarcity. Just as it is inadequate to blame the consumer or applicant for service for his lack of discipline, it is important to understand the overall systematic and social character of institutional access before moving to prescriptive solutions which would single out any single set of individuals for special criticism.

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[26] It would also have been considerably cheaper to have sunk one or more deep wells and supplied each house from centralized well(s) and pump(s). A single deep well with a small electric pump would cost no more than ₱6,000, but somewhat more if, a larger pump was used.

The Social Dimension

It is unfortunate that the social dimension of a problem is so often equated with its purely welfare implications. This is an unnecessarily restricted view. The social dimension of a problem is critically concerned with expectations of other people's present and future behavior as the key determinant of present actions. Looked at in this way, the failure to implement a program fully, the presence of serious inefficiencies in the use of materials and personnel, or any indication of ineptitude at various levels of an organization appear as more than simply "irregularities" or "anomalies". To speak of something as an anomaly clearly means that something has happened which ought not have happened or is less than optimally desirable. All too easily, however, these words begin to be used to describe *stubborn* discrepancies in implementation. In this way, "anomalies" or "irregularities" are, implicitly in a sense, accepted as, certainly unfortunate, but nonetheless intractable, and therefore *normal,* features of a plan or program. That is to say, the individual expectations and responses of officials and consumers become institutionalized as illicit but nonetheless normal parts of a process of access. Thus, since delinquent, disconnected consumers know that bill collectors and inspectors are unlikely to call more than two or three times to check on a disconnected service, they can, with virtual impunity, reconnect the service and avail themselves of free water.

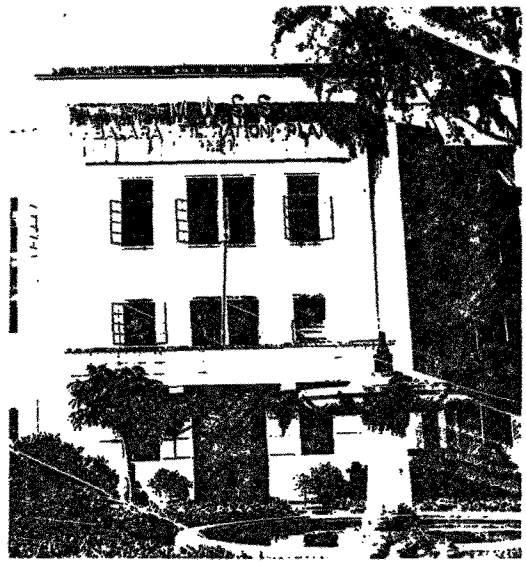
Management seeks to implement a program of investment but since there are competing priorities and claims, the program is underfunded. This, in turn, causes shortages and problems in supply and leads to consumer complaints: particular officials or groups of officials become the targets of these individual consumer complaints and this accentuates the frustrations and anxieties of employees already in a low priority and low morale programs. In turn, service suffers even further, shortages are, in this sense, institutionalized as part of the normal operating environment of the organization; consumers and applicants for services develop techniques of queue jumping ("pag-sisingit") or else become involved, as they see it, in sometimes long drawn-out follow up procedures ("paglalakad") as officials try to sort out proper procedures and priorities in a case. The expectation of delay and scarcity may then lead consumers to offer speed money ("lagay") and this then compromises officials. The irrationalities of water supply which follow further weaken the ability of the system to cope with the demands for its services, lessen its financial base and so intensify the vicious circle of undersupply and complaint.

Involved in all of these are systematically maintained expectations of undersupply, poor service, 'anomalies', and low financial priority. Individuals involved in the system of institutionalized access and allocation of water expect things to continue as they have continued and so they respond and make adjustments as they have continued to respond and adjust. The ability of individual reforms to take root in this context is very much weakened. Even the abolition of a seriously impaired organization such as Nawasa and the formation of a new organization such as MWSS may not be enough to change expectations. It is the socially maintained expectation of no basic change despite reforms which constitutes the crux of the allocation and access issue.

Vicious circles in institutional access are as much tendencies, however, as they are immutable facts. Radical breaks in a pattern of allocation, if only they can be implemented, may well lead to a change in expectations and thus to an improvement in the system's performance. The rehabilitation of a number of deep

wells in peripheral areas of Metro Manila, with an appropriation of ₱12.5 million and on the order of Mrs. Marcos, the Metro Manila Governor, may lead to one such break in the established pattern.[27] A sizable appropriation, together with the knowledge that water needs definitely will be met, ought to encourage residents to wait for an improved public supply and discourage them from taking matters into their own hands, from queue jumping, and from adding to the system's irrationalities. Salt water intrusion into ground water sources, however, is likely to restrict the use of deep wells in many parts of the metropolitan area.

Perhaps the preparation, publication, and extensive distribution of plans, priorities and schedules for improvement in water distribution for *each* local government unit is one key to the urban water management and access problem. The publication of priorities and timetables for improvement in each local government unit would serve as a guide for officials in their determination of the appropriateness of *each* application for a service connection. It would also encourage the consideration of alternatives to the present system of supply by centralized treatment plants and through individual household connections. These alternatives are necessary, at the very least, as an interim measure, to ensure that *all* households have access to clean water for drinking and other basic needs and at costs certainly no greater than those incurred by households benefiting from treated, reticulated water. One option may be the provision, by the local government unit, of public faucets in areas of very poor supply. Responding to requests by residents, the City of Manila, for example, secured the cooperation of MWSS and financed the construction of public faucets, in 1974-1975, in the Magsaysay Village area of Tondo.[28] Another option may be reasonably self-contained, decentralized water systems using ground water and/or captured rain water and operating at the individual household or neighborhood level. Etherington, describes one system that uses filtered rainwater captured in the roof of the house to either



totally supply or augment the water requirements of the individual household.[29] Public participation in the formulation of possible alternatives to the present water distribution system, and at the local government level, is essential if the desired break in established expectations is to occur.

It is essential to consider these alternatives because, even with current massive public investment in aggregate, reticulated water supply many families are entirely unable to finance their own connections and thus cannot benefit directly from these investments. The official 1974 Social Survey of the Tondo Foreshore Area found that 63% of the residents bought their water from street peddlers and another 14% used public wells or their neighbor's piped water. Wherever water is sold by the pail or drum, moreover, the effects are almost always regressive in their impact on income distribution when compared to the situation in households benefiting from MWSS connections and rates. Occasionally, arrangements are reported in which families have secured access to other people's piped water for ₱2 to ₱3 per month. Usually, however, the absence of one's own connection or nearby public well will mean a charge of around ten centavos to fifteen centavos per can of water. Sometimes the rate can drop to as low as two

[27] *Bulletin Today*, 28 August 1976.

[28] Sanggunian ng Kristianong Komunidad 1974: 1st Annual Convention, Manila: 1975, 2nd Annual Convention, Quezon City.

[29] Etherington, A. Bruce, 1976 "Eco-Settlements: An Alternative Solution for Human Settlements", a ref. to this issue of PPJ.

cans for fifteen centavos or even as low as five centavos per can; at other times, it can be as high as twenty centavos, thirty centavos, or even more, per can. These rates are not restricted to Tondo: ten centavos a can is a common price in many areas of Quezon City where the water pressure is usually very good. The average billing rate of MWSS water, (the rate that is, if there is no meter or a defective meter) is only ₱2 per head per month.

The impact of these charges on individual welfare and productivity is sometimes severe. While for many families the inadequacy of water supply is a major inconvenience for other families it is a major obstacle in their attempt to survive. Expenditures of eighty centavos to one peso a day (₱24 to ₱30 per month) on water for a family of four or five are by no means rare. With a basic, official, minimum wage of ₱10 per day, with irregular employment and unemployment, and with NGA rice at ₱2.20 per kilo, the cost of water can be a significant burden on household expenditures and, directly or indirectly, lead to an impairment of the household's productivity and welfare.

It is important to consider, *in detail,* therefore, alternatives to the present system of water distribution so as to ensure the satisfaction of at least *basic* water needs while ensuring that there is no regressive impact on poor families.[30] As President Marcos has argued "Our society is not so poor that it cannot provide for the well being of all its members; we have only to accept what must be done in order to reduce social inequality."[31]

National productivity is involved as well as individual productivity and welfare, moreover, since:

> " . . . in dealing with the issues of food and habitation, of urban growth and increased agricultural demand all at the same time, water is likely to be the most intractable constraint, more so than land, as land and soil conditions are greatly dependent on water."[32]

It is sometimes assumed that, given competing agricultural and urban demands for water, agricultural demands will or should prevail.[33] The continued growth of urban areas as major centers for formal and informal sector employment, however, makes that postulate very unlikely. Competition for scarce water between different sectors of the economy and between different income strata is likely to continue. It is vitally important therefore that, as pressure on water increases in and around metropolitan centers, water resources are managed so as to improve the welfare and productivity of poorer households by ensuring their access to clean, inexpensive water. Technical and organizational imagination will certainly be required, but so too will restrictions or taxes on excessive consumption and a policy whereby water supply goes hand in hand with urban development rather than simply following it. ●

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[30]This is also, essentially, the conclusion of a report submitted to the Local Water Utilities Administration entitled "The Social Soundness of Improving the Water Supply in Five Provincial Cities" by Rosalinda Garcia—Yangas and Delia Cecilia Ochoa Unson, Institute of Philippine Culture, Ateneo de Manila University, 1976. They also conclude; however; on page 96, that the benefits of aggregate investment in water supply "will be definitely known after the fact not before it." While this is true, it should not obscure the fact that some investment decisions will lessen the chance of meeting basic water needs while other decisions are likely to increase those chances.

[31]Marcos, Ferdinand E. 1974 "Foreword" in - *Development for the New Society,* Bureau of National and Foreign Information, Manila.

[32]Djojohadikusmo, Sumitro, 1976 "Technology, Economic Growth and Environment" in *The Survival of Humankind: The Philippine Experiment,* Conference Proceedings.

[33]Ionides, M.G. 1972, "Piped Water Supplies for Ecumenopolis" in Bell, Gwen and Jaqueline Tywhitt (eds.) *Human Identity in the Urban Environment,* Penguin Books, Harmondsworth.

THE MARINE ENVIRONMENT OF THE PHILIPPINES

Some Implications for Urban and Regional Planning

• William P. Paterson

The Tropical Coastline: A New Challenge

A relatively new sector of urban and regional planning which has aroused considerable interest in many developed countries in recent years is that of the planning and development of the coastline. In North America, Europe and Japan, there has been an increasing concern with the coastline not only as a resource area for fisheries, tourism and recreation but also in terms of recognition of its vulnerability to urban and industrial pollution. Consequently, a growing number of planning studies, metropolitan and regional plans have focused on the coastline and the coastal zone which have now emerged as significant concepts and components of the urban and regional planning process.[1]

The views and opinions expressed in this paper are those of the author and do not necessarily reflect those of the United Nations.

[1] See, for example, Council of Planning Librarians, *Coastal Land Use*. Exchange Bibliography 685, November 1974 and *Shorelines and Beaches in Coastal Management*, Exchange Bibliography 876, September 1975.

The subject of coastal planning and development has, hitherto aroused somewhat less interest among the planners in developing countries. Possibly, this is due to the fact that its relevance to overall socio-economic development appears quite minor compared to targets for crop increases and programs of infrastructure development, industrialization, health, education, housing and family planning. Of late, however, both the maritime and inland nations of the Third World have become increasingly alert to the need to lay claim to extensive territorial waters not only for fisheries but also to tap the unknown potential of the mineral and petroleum resources of the seabed. The present series of the UN Conference on the Law of the Sea may well serve as a catalyst which could bestir a number of maritime nations to take a fresh look at their own marine resources and also at the complex set of relationships which link the various uses of land and sea.

Not only is the coastal environment one of complexity in terms of components and relationships; it is also an arena of increasingly rapid competition by various uses. Moreover, for the tropical countries of the Third World, not only do all the coastal issues common to developed countries exist—and in many cases, to a greater degree—but they are overlaid with special meanings, conditions, and characteristics which are going to require even more extensive research and greater public and governmental attention than they already receive in the developed countries.

The Philippine Coastline: Some Current Uses and Conflicts

The most prominent geographical fact about the Philippines is that the nation consists of a chain of islands. For centuries, this fact has molded the nation's history and has long inhibited easy communications, although it has frequently offered a series of barriers to invaders and colonizers. There are 7,107 islands in the Republic of the Philippines and the total extent of the coastline is 17,460 kilometers which constitutes, together with the adjacent shallow seas, one of the country's most productive natural resource areas in terms of fisheries, salt and seaweed production, shells, corals, cultured pearls, tourism and recreation. The nation is also on the threshold of a new era of exploitation of the seabed through petroleum and gas extraction.

The shallow seas within the territorial waters extend over an area five times as large as the terrestial lands of the country. Indeed, according to a recent report of the Department of Natural Resources, 1.6 million square kilometers of the country constitute the total area of territorial and inland waters available for marine fishery development.[2] This includes coastal and shallow areas, where most municipal fishing operations are undertaken, and the off-shore seas extending outwards to the 100 fathom contour at the edge of the continental shelf. The untapped potential of these national fishing grounds is believed to be immense. It is estimated that as much as 20 tons of fish per square kilometer of marine waters per annum could be obtained. However, in 1974, the total catch for the whole country was only 470,675 metric tons—and of this amount, as much as 82% was contributed by only seven out of 63 fishing grounds identified by the Bureau of Fisheries and Aquatic Resources.[3]

In the seas extending to the southwest from Mindoro on both sides of Palawan in the direction of Borneo and also in a parallel band on either side of the Sulu Peninsula, extensive exploratory operations are taking place for petroleum and for natural gas. Already there are promising indications of the existence of these minerals and it is believed that their eventual discovery is only a matter of time.[4]

For centuries, the shell beds of the Philippines have been harvested for the famous capiz shells used for small window panes, for lamp shades and other decorative devices. Quite recently, the establishment of seaweed farms and farms for cultured pearls have made their appearance. Throughout all shallow coastal areas, offshore fish traps, corrals and coastal fishponds for bangus are prominent. The capacity for mariculture in the Philippines, especially through the raising of bangus (milkfish), is probably one of the highest in the world in terms of potential productivity per hectare.[5]

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[2] Antonio, T., "Our Rich Untapped Aquatic Resources", *Bulletin Today*, 28 March 1976.

[3] *Ibid.*

[4] See *Business Day*, 25 August 1976 for map of oil exploration areas in the Philippines.

[5] Marx, Wesley, *The Frail Ocean*, Valentine Books, New York, 1970, p. 263.

Urban sewage, industrial and shipping wastes ultimately find their way into the sea. How far can the ocean put up with this pollution pressure?

A newly-emerging and important economic use of the coastal zone is that of activities related to tourism and recreation. The development of hotels and resorts oriented towards coastal recreation such as Punta Baluarte in Batangas, the Davao Insular Hotel in Mindanao, the Lantaca Hotel in Zamboanga, various lodges and resorts in La Union, Cavite, and Batangas provinces, testifies to the rapidly growing interest in and enthusiasm for this type of activity.

For those in the lowest income groups, especially in Metro Manila, who cannot afford long excursions to the beach, the shoreline of nearby urban and rural beach areas exerts a magnetic attraction during weekends and public holidays. Manila newspapers frequently report on the intensive use of the foreshores of Roxas Boulevard in the vicinity of the Folk Arts Theater and at Baclaran Beach by swimmers in spite of posted warnings notifying the public of the dangers of drowning and of pollution risks in Manila Bay. A visit to almost any of the beach resort areas in Cavite or Batangas provinces during the summer months will also clearly indicate the popularity of beach recreation for the Filipino public at large.

There are, unfortunately, other and more negative aspects of the use of coastal areas by urban dwellers. In particular, the ocean has long been regarded as the final disposal area for municipal and domestic sewage wastes. Most engineering textbooks agree that the obvious and ultimate solution for urban sewage is to direct it into an outfall for transport into the sea. Unfortunately, it has been learned only recently that most marine areas of the world are rapidly approaching a stage where they can no longer safely accommodate the ever-increasing concentrations of domestic sewage without some level of damage to marine life.

Not only do ocean areas close to large cities have to absorb the effluent from urban sewage systems but they are also exposed to the impact of industrial and shipping wastes. Earlier this year, press reports indicated large fish kills in Iloilo as a result of industrial wastes in the vicinity of that city.[6]

Stress is also imposed upon the marine environment by, otherwise successful, agricultural development programs. Intensive agriculture invariably requires the use of pesticides which, being insoluble in water, usually end up in the

[6] *Bulletin Today*, 15 March 1976, reported that the dumping of oil and sugar wastes into Iloilo river killed thousands of fish according to a report to the National Pollution Control Commission recently.

sea to the detriment of fish breeding grounds and marine life in general.[7]

A reverse impact, from the marine to the terrestial environment, is that of the intrusion of salt water which can occur not only in estuaries but also in groundwater table, especially in coastal plains where the water table has been lowered by overpumping a number of wells, or by wholesale removal of sand from beaches and shorelines. Within the last year, it was noted that Laguna de Bay was fast becoming salty and recently a set of lock gates has been designed for the Pasig River both as a flood control device and also to prevent further saltwater intrusion from Manila Bay into the lake when high tides occur during the dry season.

In an area more remote from Manila, an important commercial activity is the trapping, for export, of small aquarium fish especially in the shallow reef areas around Sibuyan Island in the province of Romblon. This highly remunerative activity augments the economic base of the province. Ecologists warn, however, that there could be a complete elimination of certain individual species if this activity should continue without adequate control and supervision.[8]

Another use of the Philippine shoreline, and one which is very much a sign of the economic times, is the designation of safe haven areas for the laying-up of large oil tankers which are temporarily redundant until world wide demand for crude oil expands again. In December 1975, three areas were indicated as sanctuaries for tankers in the Gulf of Davao, namely, Malalag Bay, Bunawan Bay and Pujada Bay which are all well sheltered from typhoons and heavy waves by the surrounding hills.[9]

One less desirable utilization of shoreline areas concerns the practice of quarrying sand and gravel from beaches. A letter to the editor of the *Bulletin Today*, on 10 December 1975, questioned this practice with special reference to La Union province and, in particular, noted, on one occasion, "an excavation, 30 meters long, 6 meters wide and 1 meter deep which had been created by contractors. Local officials stopped the quarrying when the beach owners took photographs of the work."[10] All such operations have recently been suspended by Secretary Leido of the Department of Natural Resources until the Department has had an opportunity to complete a full review of the situation.[11]

Due to man's impact on the landscape, the boundaries or the character of the coastline is sometimes changed to his disadvantage. For example, inter-island vessels used to come up the Rio Grande river and berth alongside the docks in the City of Cotabato in Mindanao, but, for some decades, this has not been possible. According to Mayor Ty of Cotabato, "destruction of forests along the river ended that heyday of Cotabato sea commerce." By April 1976, the Cotabato City Council was in the process of purchasing a dredger from the Australian government to dredge a channel in the mouth of the Rio Grande in order to try and restore access to the city's wharves for seagoing vessels.[12]

From the above, it can be seen that the use, misuse and conflicts of use within coastal areas should also be the concern of urban and regional planners in addition to being the concern of specialists such as marine biologists, fisheries experts, geologists, mining engineers, coast guard officers, etc. It would seem, therefore, that because there are continuing and increasing impacts between the marine and terrestial environment, and *vice versa*, more attention should be paid to the geographic, ecological and economic characteristics and opportunities of coastal areas by urban and regional planners than has been customary in the past: both in the initial preparation of urban and regional plans and in the continuing planning process.

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[7] *Bulletin Today*, 20 March 1976, reported that "the National Pollution Control Commission had detected 'trace amounts' of organo-chlorine pesticides in Manila Bay, Laguna de Bay as well as in the Pasig and Marikina Rivers. In particular, 'low residue' levels of DDT, endrin, dieldrin, aldrin, heptachlor, and heptachlor-epoxide; all active ingredients of chlorinated pesticides known in the market, were found in these waters and it was believed that this can be traced to run-offs from agricultural lands."

[8] Lubbock, H.R. and Polunin, N.V. "Conservation and the Tropical Marine Aquarium Trade" in *Environmental Conservation*, Vol. 2, No. 3, Autumn, 1975, p. 229.

[9] Bravina, P.L., *Bulletin Today*, 10 December 1975.

[10] *Bulletin Today*, 10 December 1975.

[11] Bulletin Today, 21 June 1975.

[12] *Bulletin Today*, 18 April 1976.

The Coastal Zone Defined

The word "zone" may be slightly misleading to urban and regional planners, as it usually denotes a specific area designated in a zoning ordinance. However, the term is used here in its more general and geographic sense and can be defined as follows:

> "The coastal zone can be considered as consisting of the coastal waters and adjacent shorelines influenced by each other; including transitional and inter-tidal areas, salt marshes, wet lands, and beaches. The coastal zone extends outwards usually to the limit of the edge of the continental shelf (100 fathom contour) and extends inland from the shoreline to the extent necessary to control land uses which may have a direct and significant impact on the coastal waters."[13]

This suggests that urban and regional planners should consider not only the use of land down to the high water mark but also, that set of relationships which extends from the seaward side of the inland watershed or divide down to the outer limits of the continental shelf. It is only by considering these characteristics of the coastal zone which cross the rather tenuous boundary line of the high or low water marks, that a full realization can be gained of the significance of all coastal land use relationships between the seabed, the surface of the sea and the adjoining shorelines, beaches and upland areas.

Coastal Plans and Policies in Developed Countries

The significance of the coastline as an important element of urban and regional planning has come to the fore in Britain, in European countries, the United States, and Japan, particularly within the last ten to fifteen years. In each instance, however, the focus is slightly different. In Britain, for example, the coastline is viewed largely as a valuable (and rapidly diminishing) recreational resource for domestic and weekend tourism. More recently, consideration has been given to the coastline as a support baseline for North Sea oil activities.[14]

In Japan, the coastline is viewed more as an urban frontier which may provide a threshold for new maritime floating cities or for existing cities to re-extend outwards over the sea.[15] In addition, Japan has recently launched a massive national survey of all coastal resources in order to reduce its dependence on deep-sea fishing throughout the world.[16]

In the USA, concern over mounting industrial pollution and the recognition of ecological relationships between the productivity of inshore coastal zones and the immediate upland areas, have spurred a special interest in coastal planning and in coastal zone management. In each country, special issues of the coastline pertaining to the natural environment, resource exploitation, pollution, recreation, land tenure, urbanization and public access have been identified and subjected to continuing and widespread research.

Significance of the Coastline for Developing Countries

For the tropical countries of the Third World, not only do the coastal issues common to developed countries exist—in many cases to a greater degree but due to tropical conditions they extend into a greater range and are often more complex. These factors therefore will need extensive research, constant public attention and deliberate inclusion in the planning process.

In the following section some of these special characteristics and issues of the tropical coastline will be briefly reviewed.

The Nature and Significance of Tropical Coastlines

In the first place, the offshore lagoons and shallows, the coral reef areas, the mangrove swamps and the estuaries of marine tropical countries are ecosystems which, due to long hours of sunlight and warm sea temperatures, are rich in the production of marine plants and organisms. These, in turn, are the foundation of many food chains and contribute protein to national food supplies. *Secondly,* the coastal areas offer the most appropriate location for stimulating future intensified production of all kinds of seafoods and brackish water fish.

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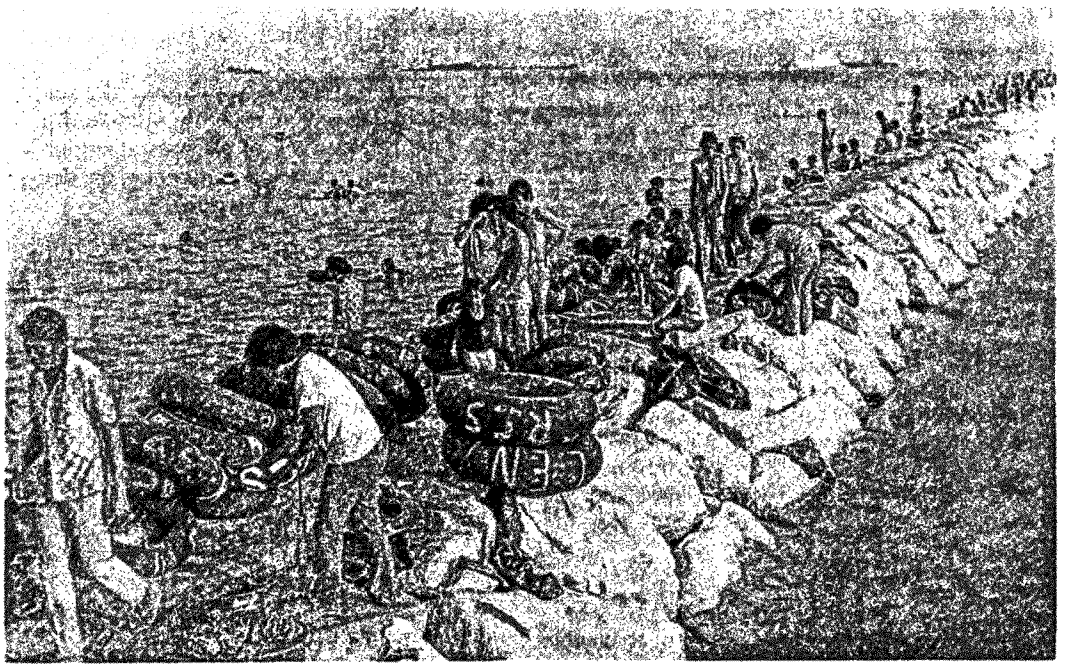
[13]Adapted from Koppelman, Lee, *Integration of Coastal Science and Regional Planning,* Praeger Publishers, New York, 1974, p. 99.

[14]White, I.L., Cash, D.E. et al., *North Sea Oil and Gas: Implications for Future United States Development,* Council on Environmental Quality, University of Oklahoma Press, Oklahoma, 1973.

[15]Ohe, Mariana, "Japan Dreams of Aquapolis," in *Bulletin Today,* 22 September 1975.

[16]*Business Day,* 9 March 1976.



Beach recreation is highly popular among Filipinos. Witness the intensive use of the Manila Bay foreshore along Roxas Blvd., despite the risks of pollution and drowning.

Thirdly, the existing beaches and coral reefs of tropical countries are among the better international tourist attractions of the world and are also valuable recreational resources for the nation.

Fourthly, as in developed countries, pressures are already being exerted by private developers and corporations for exclusive titles, use, and development of beaches and coastal areas especially those within easy reach of capital cities. This could effectively restrict access to beaches to foreign tourists and members of local upper-income groups only. *Fifthly,* the rapid urbanization of developing countries often finds its expression in rings of accretion to a primate coastal city or in land reclamation areas and similar extensions of its seaward edge, thus threatening estuarine and wet land productivity through eradication of fish and crustacean breeding grounds, and increased discharges of domestic sewage, wastes and industrial effluents. *Finally,* shallow tropical waters are rich in their resource potential, not only for fish but also for seaweed farming, oyster and pearl culture, and as valuable scientific and wildlife reserves.

In summary, tropical coastlines and their immediate offshore waters from shallow lagoons to the outer edge of the continental shelf, constitute a unique and precious resource area endowed with special characteristics of productivity and rich variety in addition to those enjoyed by the coastlines and offshore waters of countries in cool temperature zones. Unfortunately, both the productivity and the attractiveness of these marine resources can be diminished and even completely destroyed by careless or mismanaged upland uses. The future integrity of marine resources is thus highly dependent on the wise use and management of land within the coastal zone.

Natural Disasters of the Coastal Zones

The coastal zone of tropical regions suffers from the various risks of earthquakes, floods and typhoons. Recent developments in seismology plus historical records have made it relatively easy to identify areas which are especially vulnerable to future seismic shocks. Very often, these are the more unstable alluvial lands or land reclamation areas, and, in certain localities, such conditions can be a contra-indication for new urban development. Seismic shocks can also cause subsidence of sizable parts of an unstable coastline as was the case in 1692 on the island of Jamaica when a large portion of the town of Port Royal slipped into the sea at the time of a heavy earthquake.

Tidal waves, more accurately known as tsunamis, are also threats to shoreline development in many tropical shoreline areas. In some islands (notably Hawaii), early warning systems have been estabished which enable evacuation of the residents from areas of risk some hours before the tsunami is due to strike. In more remote areas without the benefit of early warning systems, the wisest preventive measure is to require the construction of all residential buildings at a safe distance from the sea well above the normal high water mark. Only recently, tragic loss of life and other sufferings occurred in Mindanao as a result of the tsunamis of the Moro Gulf which struck on the night of August 16/17, 1976.

Of a less traumatic nature is the constant erosion of some coastal areas caused by littoral drift and by storm surges from the sea. In some places the coastline is gradually advancing inland every year. On the "downstream" side of offshore islands or sand spits and at river mouths the sea may gradually build up new land areas by the deposition of sand and silt particles carried downstream in rivers and along the shorelines by the littoral drift current. On a global basis however, it is generally accepted that sea levels are rising.[17]

Residents in estuarine or alluvial plain areas may experience additional levels of severity in times of flooding, if flood waters are impeded in their flow to the sea by the countering forces of a high tide, especially if coupled with strong onshore winds. The combination of these two conditions can cause flooding of some coastal areas even without any assistance from storm run-off inland. Wherever possible, the best protection against such threats is to ensure that all habitations are constructed at a sufficiently high elevation above the normal high tide mark.

Barrier beaches or extensive sand dunes along the coastline, together with their natural vegetation of low shrubs and creeping vines form the best protection against tsunamis and coastal erosion. They have been described as "the mainland's outer defense against a dynamic and aggressive sea".[18] Untouched mangrove swamps can also serve the same purpose.

Unfortunately, people who live and work along the coastline and who are subject to typhoons, natural storms and tsunamis, do not always have a sufficient degree of recognition of these hazards. Their response is frequently restricted only to the period immediately following a disaster. In a survey of the eastern seaboard of the USA in 1973, it was found that although 90% of the residents had experienced storms, only 66% *expected* storms in the future. Furthermore, although 50% had experienced damage with these same storms, only one-third of the respondents expected damage from any future storms.[19] These attitudes help to explain why people continue to relocate themselves in areas where they are exposed continually to risk of natural disasters.[20] It must, therefore, be part of the coastal planners' responsibility to foresee, guard against, and continually remind local residents of the potentially disastrous effects of tsunamis, storms, and similar hazards in areas of low-lying shoreline development.

Outline Strategy for National Coastal Policy; The European Experience

At this point, it may be helpful to consider the proposals of the members of the Council of Europe, as one example of a set of recommendations on proposed policies regarding coastal development at the national level. These are as follows:

"1. Deal with the problems of protecting the seashore in the context of the national, coastal heritage as a whole, and in order to do so:
   - draw up an inventory and make a comprehensive study of the country's coastline;
   - and, if necessary, set up appropriate scientific bodies of a consultative nature to assist the pubic authorities in this work;

2. Endeavor to divide the coastline into homogenous zones within which the land-use is rationally planned with

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[17]Steers, J.A. (ed.), *An Introduction to Coastline Development*, MacMillan, London, 1971, p. 25.

[18]Schuberth, C.J., *"Barrier Beaches of Eastern North America"*, in Russwurm, L.H. & Sommerville, E., *"Man's Environment: A Systems Approach,"* Duxbury Press, Mass., 1974, p. 312.

[19]Barry, Brian J.L. & F.E. Horton, *Urban Environmental Management: Planning for Pollution Control*, Prentice-Hall, Inc., N.J., 1974, p. 24.

[20]See also *Bulletin Today*, 16 August 1976 for account of "Volcano Island's residents seeking to return to their former homes."

respect to the various elements making up the environment;

3. Institute appropriate machinery to coordinate the various actions concerning the coastline, whether they are initiated by national or local authorities;

4. Make and distribute a systematic review of all the existing legal provisions of a nature which facilitate the protection of the coast whether they relate specifically to isolated coastal belts or to the national territory as a whole;

5. Regulate development in coastal areas:
   - by issuing development bans applied to appropriate strips of land along the waterfront;
   - subjecting the granting of development permits to particularly stringent conditions;

6. Proclaim the principle of free public access to the coast and give effect to this principle as required by:
   - creating adequate means of access to the various beaches;
   - establishing the necessary rights-of-way through private property situated on the seafront;
   - purchasing, if necessary, the land required to give free access to the beach;

7. Review systematically the uses to which public land in the coastal belt is put, in order to further the policy of protecting and improving these areas;

8. Adopt general measures to protect and conserve wild flora, fauna, and coastal ecosystems in the following manner;
   - create regulations governing marine fishing including underwater fishing;
   - control power boating;
   - limit local marine traffic commensurate with the carrying capacity of the local areas;

9. Create nature reserves along the coast with a view to:
   - conserving natural, historical, scenic and archeological sites;
   - protecting of flora, fauna, and ecosystems particularly in marshes and intertidal wetlands;

10. Adopt special measures to protect the coastline from landslides:
   - by stabilizing sand dunes;
   - by regulating or prohibiting excavations and removal of sand and gravel;
   - by prohibiting the cutting and/or uprooting of vegetation;

11. Regulate and impose the necessary precautions on dumping on the coast or into the sea of any waste product or harmful substance likely to impair or pollute the coastal environment;

12. Institute regular inspections of the cleanliness of beaches and the quality of coastal waters;

13. Place considerable stocks of materials (especially cleansing materials which do not disturb the marine ecological balance) in advance at appropriate points along the coast, so that any accidental pollution of the beaches can be dealt with rapidly;

14. Undertake a vigorous campaign to inform and stir public opinion in regard to the protection of the seafront and encourage all public and private initiatives to safeguard the coastline, especially in the form of the creation and management of protected areas;

15. Sign and/or ratify the existing world and regional conventions on the protection of the marine environment;

16. Cooperate closely with other nations where their coastal areas adjoin, with a view to:
   - harmonizing their various sets of regulations and coordinating action with regard to the protection of sites, flora, fauna, and to pollution control;
   - undertaking, where appropriate, joint action such as the management of international parks or the pooling of supervisory and pollution control services."[21]

[21] Committee of Ministers, Council of Europe, "Resolution on the Protection of Coastal Area", in *Environmental Conservation*, Vol. I, No. 1, Spring, 1974, p. 14.

Recent Developments in Coastal Zone Management

If we use the above resolution as a checklist, it is encouraging to find that many of the measures recommended are already in operation in the Philippines. For example, under item 9 (Nature Reserve), Marine Parks have already been established at Hundred Islands in Pangasinan, at Puerto Galera in Mindoro and at 14 other locations throughout the archipelago.[22]

Under item 10, the Secretary of the Department of Natural Resources only recently suspended all licenses and permits to excavate sand and other foreshore minerals pending a full investigation by officers of the DNR.[23]

Under item 11, pollution hazards in Philippine waters are now being combatted by the National Operation Center for Oil Pollution (NOCOP), a branch of the Coast Guard service especially set up to deal with oil spills and other types of marine pollution, with increased penalties under Presidential Decree 602.[24] In addition, combined operations of the Bureau of Fisheries and Aquatic Resources and Provincial Constabulary personnel have recently apprehended several groups of fishermen who were using dynamite to kill fish.[25]

What still remains, however, is for urban and regional planners to undertake a more comprehensive approach at all levels of government towards the planning, development and management of coastal zones. It is suggested that among the ways in which urban and regional planners could help to formulate appropriate strategies and policies for coastal management and assisting a first step might be to identify the types of planning activity and concern which could operate most appropriately at the three main levels of planning, namely: national, regional and local.

Coastal Planning Strategies at the National Level

At the national level, the emphasis is already focused on national policies of economic and ecological *protection* which depend on enforcement of national legislation and on expenditures from the national budget.

These responsibilities, therefore, include:

1. Location and development of ports and harbours;
2. Location of bases for coast guard or life boat service and search and rescue operations; operation of fisheries protective vessels and anti- smuggling patrols;
3. Identification of national parks and reserves with provisions for their policing and management;
4. Environmental protection: control of urban and industrial pollution, protection of marine parks and reserves, prevention of destructive practices, e.g. beach sand removal, reef dynamiting, etc.;
5. Protection of off-shore seabed resources (petroleum and seabed minerals) from unauthorized exploitation;
6. Provision of safeguards against marine-eco disasters, e.g. massive oil spills from wells or from grounded or colliding vessels;
7. Continued support of research and monitoring of coastal problems.

Coastal Planning Strategies at the Regional Level

At the regional level, it can be assumed that there will be a continuing concern with *economic development* in line with the present philosophy and leadership provided by the National Economic and Development Authority (NEDA) and with the improving of socio-economic conditions in all regions. Within this framework, it is felt that specific policies and strategies relating to the regional coastal zones could be as follows:

1. Location and development (or expansion) of interisland or coastal ports;
2. Development of regional fisheries with special emphasis on shore facilities, freezing plants and access to markets;
3. Identification of focal areas for resort and tourism development (integrated, as far as possible, with adequate provision of

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[22]Bjorklund, Mona I., "Achievements in Marine Conservation, I Marine Parks" in *Environmental Conservation*, Vol. I, No. 3, 1974, p. 221.

[23]*Bulletin Today*, 21 June 1976.

[24]*Bulletin Today*, 27 July 1976.

[25]*Bulletin Today*, 24 July 1976.

beach and park areas for the general public);
4. Support, control and development of all extractive activities; sea-weed farming, shell and fish collecting, salt pans, etc.;
5. Development of infrastructure programs supportive of the region's economic and urban development;
6. Balanced combination of the above activities and uses within a regional plan.

Coastal Strategies at the Local Level (Urban or Municipal)

At this level, the emphasis on strategies would be on those relating to policies for *human settlements* and the main concerns could be as follows:

1. Safeguarding residential development from the effects of marine natural disasters by limiting the location and construction of all new buildings to a safe distance above the high water mark;
2. Safeguarding permanent public access to waterfront and beach areas through preservation of existing access points and creation of new ones where necessary;
3. Elimination of existing or impending land use conflicts, such as location of factories near shallow fish breeding areas, residential or recreational areas;
4. Utilization of good civic design principles to take maximum advantage of the opportunities for amenity in urban waterfront areas, e.g. preserving views of the sea;
5. Provision of adequate local beach and waterfront park areas for public recreation including the monitoring of water quality and the maintenance of beach cleanliness;
6. Support of regional economic policies through complementary local infrastructure programs, zoning and other municipal ordinances;
7. Design, construction and operation of sewage disposal facilities to minimize pollution of the marine environment, consonant with reasonable costs;
8. Balanced and integrated coastal land use and activities through preparation and implementation of municipal or city-wide comprehensive land use plans;
9. Active program of education directed at both the manufacturers and the general public to eliminate or reduce all forms of industrial pollution; particularly when diverted into estuaries and other vulnerable coastal areas.

Obviously, the above listings are neither complete nor comprehensive but could be taken as a starting point for further expansion of a planning approach to the coastline with suitable adaptations to tropical conditions.

Planning Methodologies for the Coastal Zone: A Simplified Systems Approach

In addition to the foregoing guidelines it may also be helpful to outline a general procedure upon which to base more detailed methodologies applicable to a given coastal planning problem. Accordingly, a tentative outline for a modified systems approach to planning coastal zones in a regional planning context is illustrated in Figure 1.

This approach starts in the upper left hand corner with a Reconnaissance Survey of the area which would identify the existing major activities, land uses, and role of the planning area.

The term "role" means its major socio-economic function, e.g.:

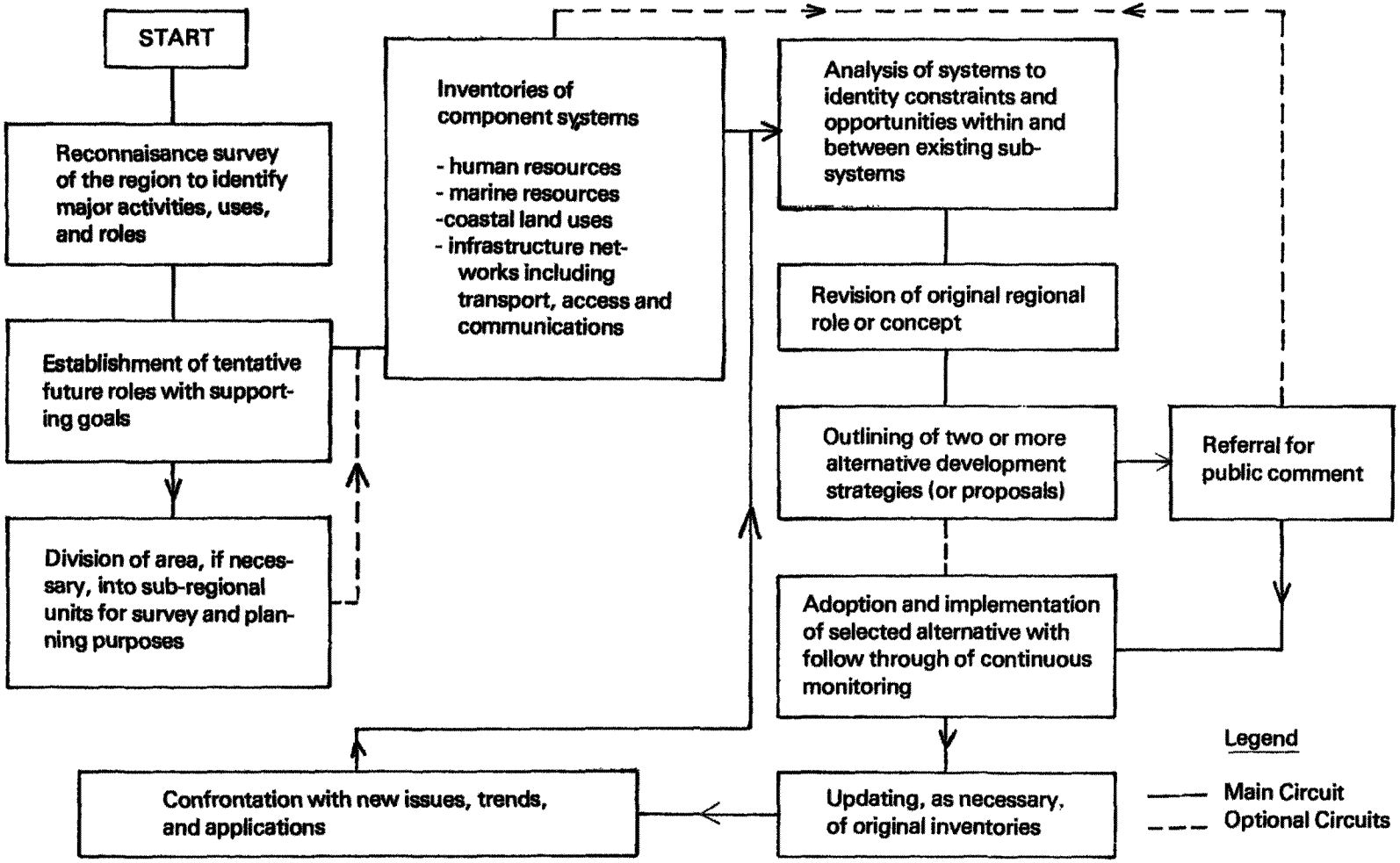
An area devoted mainly to:

a. agriculture and related industries,
b. logging and related industries;
c. fishing and exploitation of marine resources;
d. mining and ore processing;
e. tourism and public recreation.

In reality, most regions will probably fulfill some combination of two or more of these roles, which would be further identified as the planning process continues.

The next step should be an attempt to identify a tentative future role or combination of roles for the region together with supporting socio-economic goals within the framework of the national development policy. The insertion of, even preliminary, goals at this stage will help to restrict and contain surveys and inventories of data to manageable proportions and should thus achieve a saving of funds and manpower.

Figure I
OUTLINE OF
A SYSTEM'S METHODOLOGY FOR REGIONAL
PLANNING WITHIN THE COASTAL ZONE



One optional "sub-circuit" is also suggested at this point where the area as a whole may be subdivided, if necessary, into sub-regional units for both survey and planning purposes on the basis of separate roles such as forestry, agriculture, etc., or in terms of the expected significance of their character and rate of development. The advantage of this step is that it may economize on time-consuming surveys, especially as it is usually found that the need for precise data of *all* sub-areas is not essential in the early stages.

The extent of the detailing of the inventories of component systems will depend both on the variety of roles which is being fulfilled by the region under review as well as by the complexity of the system being examined. Although one must sometimes accept limitations in the scope or depth of surveys as a result of the limitation of trained technical or professional manpower, it is desirable that all component sub-systems be reviewed by the best qualified personnel who are available locally. Human resources would include not only the conventional demographic approaches of population distribution, characteristics, and projections but would also be concerned with such issues as cultural communities, community values and customs.

The scope and detailing of the marine resources inventory vary considerably, depending on the natural characteristics of the coastline. In cases where specially productive marine ecosystems such as large estuaries and extensive mangrove swamps, shallow lagoons and coral reefs: a survey and evaluation of the marine resource base should be carried out in detail by qualified personnel.

Coastal land uses would be covered by the conventional types of land use inventory techniques used in other types of planning processes. The transport system inventory should contain details of the component of access across the interface between land and sea, and this would apply not only to port facilities, including existing and potential roll-on, roll-off ferry connections, but also to access to the waterfront itself for residents and visitors along the entire length of the coastline. Other infrastructure elements which have a special impact on the marine environment such as sewer outfalls, piers, docks, etc. should also be included in the inventory of coastal land use.

The next stage would require an analysis, not only internally of each sub-system to identify its constraints and its opportunities, but also to identify the points of contact, whether they be complementary or conflicting between the existing sub-systems.

It is probable that the original regional role or concept identified earlier may have to be revised in the light of new data derived from the inventories of the component sub-systems and from the subsequent analysis.

In the conventional systems approach, two or more alternative development strategies or proposals are usually prepared and then compared against certain criteria such as goal achievement. However, in most developing countries, limitations of time, manpower, and funds will rarely permit the preparation of more than two or three alternative development strategies. It is also more likely that the range of options and alternatives for various forms of economic development would be more limited in a developing region than in a region of an industrial country with a longer history of complex economic development.

At this stage, it is conventional to refer the major alternatives for development to the widest possible cross-section of the public for comment. This can be done either through existing institutions or through special public meetings called for that purpose by the regional development authority, the provincial governor, or the appropriate authority responsible for decision-making within the planning process.

The next stage would be the adoption of the selected development alternative together with the more detailed preparation of proposals for implementation. The planning team should then undertake, wherever possible, continuous monitoring of development, which in turn may suggest further adjustments of planning policies and programs.

From time to time, preferably following each national census and at least at five year intervals, revisions should be made of the original inventories in order to bring them up-to-date. This, in itself, may result in the need for a complete re-run of the planning process if suf-

ficient changes and interactions have taken place between and within the existing sub-systems.

The need to update and to rethink the planning process will most likely result from one or more confrontations with new development issues, emerging socio-economic trends, or applications from major private developers. At this stage, it may be found desirable to analyze the new proposals, not only in the light of environmental impact analysis but also through a social impact analysis to identify as closely as possible the effect of new proposals on the regional area under concern in terms of possible social, economic and ecological effects.

Finally, it must be emphasized that the methodology for any specific urban or regional planning area should ideally be designed only shortly in advance of commencing the planning operation and with a sound understanding of the major socio-economic characteristics and physical features of that area.

Professional planners reviewing the above suggestions will find that there is little which is new in the approach suggested and no more can be claimed than the fact that it consciously and specifically includes the consideration of marine resources and coastal land uses and the issues derived from them as part of the normal comprehensive regional planning process. What is suggested here, therefore, is not that a new type of planning should be introduced to be known as "coastal area planning", but rather that concepts of the coastal zone and its issues and problems should be included in over-all comprehensive planning processes and methodologies for all areas within the coastal zone.

Supportive Activities: Education and Research

Dedicated planners alone, however, will not be enough to institute an adequate program of comprehensive coastal development and protection. What will still be needed is, in the first instance, a re-orientation of planners themselves, and an awakening to the latent opportunities as well as the hazards which exist within this extensive resource area; secondly, it will be up to the planners to communicate the significance of these opportunities and constraints to the decision makers and thirdly, and possibly most important of all, to produce a sense of environmental awareness among the general public, particularly in school-age children and in youth groups.

One of the greatest needs at present in the field of coastal planning and management in the tropics is that of research. The following areas particularly commend themselves for investigation:

1. Information systems and data requirements for coastal development planning;
2. Appropriate methodologies for comprehensive coastal planning in the Philippines at national, regional and local levels;
3. Methodologies and techniques for carrying out economic-ecologic analyses for evaluating both the economic and ecological consequences of alternative development policies or projects.

Since the early sixties, a considerable amount of work has already been undertaken along the above lines in the United States, Britain and elsewhere. What is now needed is to select and adapt as may be appropriate these methodologies and techniques so that they can be applied effectively within the setting of the Philippines. This would appear to provide an excellent opportunity for Filipino planners to develop coastal planning techniques which could result in wider application throughout the Southeast Asia region.

In conclusion it would appear that it is now timely for urban and regional planning in the Philippines to incorporate concepts of coastal zone planning and management within the existing process of national, regional and urban plan preparation. This would mean not only a broader approach to the process of plan formulation incorporating additional professional disciplines, but would also require consideration of a wider range of planning goals. These should display a concern for wise resource use, for a reduction of pollution hazards and above all for the maintenance of a marine environment which is a fit setting for the series of human settlements which will continue to expand along the national shoreline. ●

Legislation Affecting Foreshore Lands In The Philippines

Introduction

One category of land which has stirred some unusual interest, if not actual controversies in the very recent past are foreshore lands.[1] This is because they have become the sites of some serious land and water pollution problems and also conflicts of rights between private lessees or owners of property adjacent to them, on the one hand, and the general public, on the other.[2] These conflicts are over the matter of rights of access to the foreshore lands and to the seas beyond, of which some sectors of the public claim they have been deprived. In one sense, these problems could be considered as peculiar to foreshore lands which are different from other categories of land. Their distinguishing feature is that they lend themselves to a variety of uses unique to them which require access to water as a necessary element. The fact that one of the major thrusts of the present administration's development activities is tourism has intensified the desirability of foreshore lands. Precisely because of the attractive features of these lands, they have become the sites of intensive tourist-related land uses and activities, such as beach houses and resorts, restaurants and cocktail lounges.

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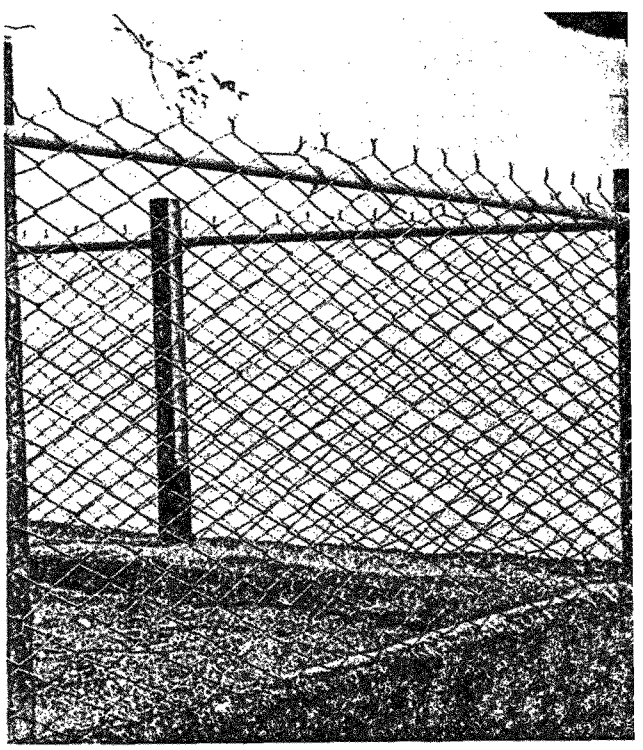
[1]Foreshore lands refer to that part of the shore which is alternately covered and uncovered by the ebb and flow of the tide. This is a *Webster's Dictionary* definition which has been adopted by the Bureau of Lands, the government agency which has the authority and control over their management and disposition.

[2]Foreshore lands earlier made headlines when the Tondo foreshore lands became the subject of so much controversies affecting land tenure. The Tondo foreshore lands were reclaimed by the national government in the late 1940 as part of a plan to expand and improve the city port facilities. Squatters, however, moved into the place and clamored for the lands to be sold to them. Through a series of laws the foreshore lands were sold to their bonafide tenants at nominal cost (See R.A. 559 dated June 17, 1950; R.A. 907 dated June 20, 1953, R.A. 1597 dated June 16, 1956 and R.A. 2439 dated June 21, 1959). The land tenure issue came up again in 1974 after the declaration in 1974 of President Ferdinand E. Marcos that government owned lands should henceforth be disposed of only through lease.

Since many of the Foreshore occupants still had not received their titles to the lands, this declaration was received with an outcry by the residents who had always hoped they would become owners rather than lessees of the land. To study and formulate solutions to the land tenure problems in the Tondo foreshore area, an *ad hoc* Committee on Land Tenure in Tondo Foreshore land was created by Memorandum Circular No. 799 of the Office of the Executive Secretary dated February 4, 1974. The recommendations of this Committee were subsequently adopted in Presidential Decree No. 814 signed by the President on October 17, 1975.



Asteya M. Santiago

In another sense, these problems could be traced to inadequate and ineffective legislation affecting foreshore lands. It is with this particular aspect that this paper will deal. It will look at some of the major problems arising from the use and occupation of foreshore lands, and will trace them to some gaps in the legislation or actual regulation of foreshore lands. In the process, it will pinpoint areas for reform by way of improving existing legislation or by introducing new provisions which could be incorporated into legislative enactments or in the implementing rules and regulations enforced by the Bureau of Lands.[3]

[3]According to Atty. Ernesto C. Mendiola, Assistant Director of the Bureau of Lands, one of the proposed undertakings of the Legislative and Research Division of the Bureau of Lands is the review and updating of its rules and regulations affecting the management and disposition of public lands, most of which were formulated in the prewar years. (Interview with Atty. Mendiola, August 1976.)

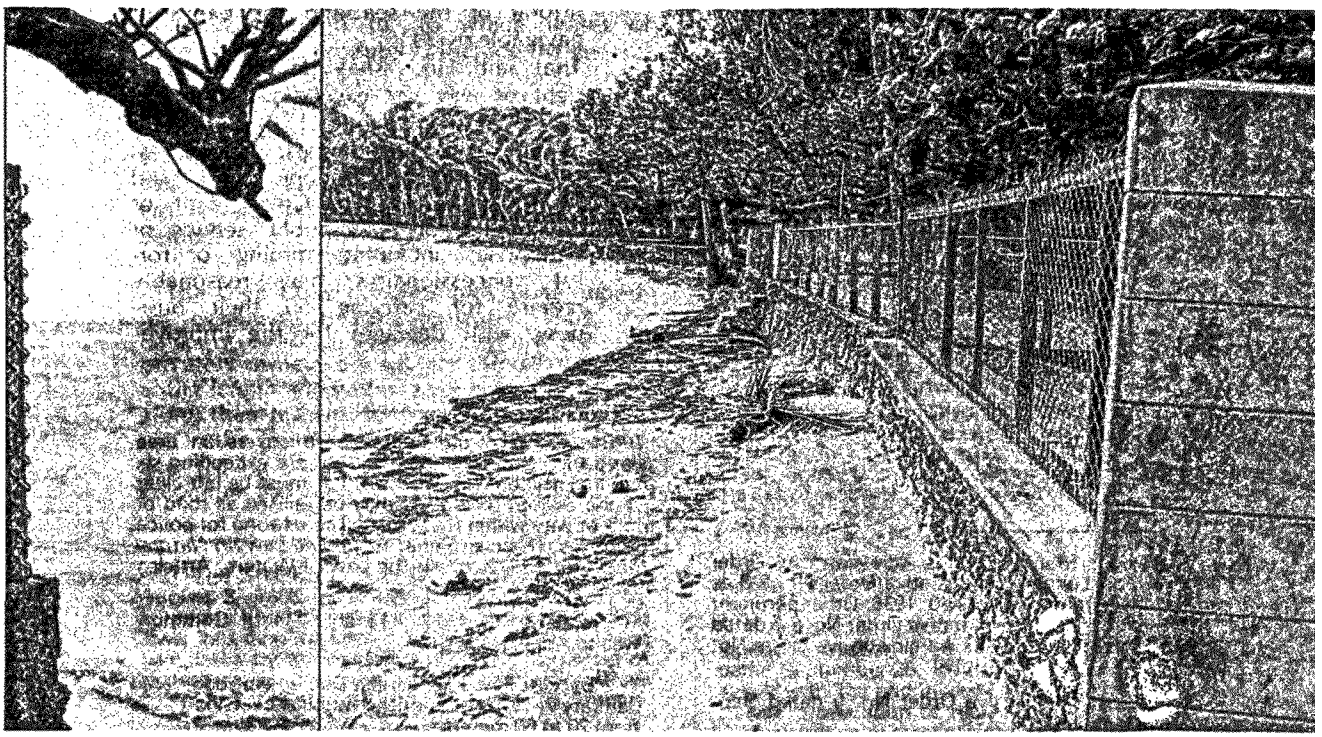
Legislation Governing Foreshore Lands

Foreshore lands, together with lands reclaimed by the government by dredging, land filling, or other means, and marshy lands or lands covered with water bordering upon the shores or banks of navigable lakes or rivers belong to the broad categories of lands which, not being either timber or mineral lands, are intended to be used for residential, commercial, industrial or other productive purposes than agricultural.[4] These lands are open to disposition or concession in accordance with Commonwealth Act 141 or the Public Land Act, as amended. Disposition here is limited to lease to private parties and only in cases where these lands have been declared by the Secretary of Natural Resources as "not necessary for public service.[5]

[4]Section 58, Commonwealth Act 141 dated November 7, 1936, as amended.

[5]Section 61, Commonwealth Act 141. The Constitutional provisions affecting the lease of public lands such as qualifications of lessee and maximum area that could be leased are equally applicable to foreshore lands. (Article XIV, Section 11. Philippine Constitution of 1973.)

Foreshore lands stir conflicts of rights between private owners / lessees and the general public.



The provisions of the Public Land Act governing the lease of foreshore lands have been amended by Republic Act 2694 approved on June 18, 1960 insofar as the amount of rental of the land is concerned by fixing it at "not less than three percent of the appraised or reappraised value of the land plus one percent of the appraised or reappraised value of the improvements." Rental for lands reclaimed by the government, however, are fixed at not less than four percent of the appraised or reappraised value of the land plus two percent of the appraised or reappraised value of the improvement thereon.

The more detailed rules and regulations governing the disposition of applications for alienable lands of the public domain and those governing the issuance of temporary permits for occupation and use of non-mineral non-timber public lands embodied in Land Administrative Orders promulgated by the Bureau of Lands also apply to foreshore lands.[6] Under these rules and regulations, no lease for reclaimed, foreshore or other lands of the public or the private domain to be used for residential, commercial, industrial or other similar purposes, shall be granted for a term of more than fifteen (15) years. In case an applicant undertakes to make extensive and important improvements on the land and the Director of Lands believes that a longer period is necessary for the recovery of the expenses, he may recommend to the Secretary of Natural Resources the period which, in his opinion, is reasonable, provided that such period shall not exceed twenty five (25) years.[7]

All contracts with the lessees are signed by the Secretary of Natural Resources. The contract contains certain conditions and restrictions affecting the use of the land. Among these conditions are:

1. That the land shall be used only for the purposes for which the lease was applied and authorized, subject to the penalty of termination of the contract;
2. That the plan for the permanent improvements the lessee is authorized to construct on the land shall be approved by the Secretary of Public Works, Transportation and Communications; and
3. That the lease is made subject to the easement of the coast police[8] and other easements reserved by the Law of Waters, the pertinent provisions of the Public Lands Act, other laws existing or which may be enacted, and to all easements and other rights acquired by owners of adjacent lands and those bordering upon the foreshore or marshy lands.

The pertinent provisions of the Public Land Act referred to in item 3 above include the following:[9]

1. That no lands shall be granted when this affects injuriously the use of any adjacent land or of the waters, rivers, creeks, foreshores, roads or roadsteads, or vests the grantee with other valuable rights that may be detrimental to the public interest.
2. That the lands shall be subject to the same public servitudes as exist upon lands owned by private persons, including those with reference to the littoral of the sea and the banks of navigable rivers.
3. That said lands shall be subject to a right of way not exceeding 20 meters in width for public highways, railroads, irrigation ditches, aqueducts, telegraph and telephone lines and similar works as the Government or any public or quasi-public service or enterprise, including mining or forest concessionaires, may reasonably require for carrying on their business, with damages for the improvements.[10]

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[6]These are found in Lands Administrative Order No. 7-1 and Lands Administrative Order No. 8-3 as amended, both dated April 30, 1936. Other pertinent Orders are Lands Administrative Order No. 8-5 dated August 8, 1936 and Lands Administrative Order No. 8-6 dated September 18, 1947.

[7]Lands Administrative Order No. 9 dated September 21, 1936.

[8]Easement of the coast police covers an area along the coast having a width of not exceeding six meters, which if privately owned, must be left clear by the owner. This zone may be utilized as road or right of way within the terrestial coast zone for police purposes. (Narciso Peña, *Philippine Law on Natural Resources,* 1972, citing the Law of Waters, Articles 10 and 11).

[9]Sections 109, 112, 113 and 114 of Commonwealth Act No. 141.

[10]By virtue of Presidential Decree No. 635 dated January 7, 1975, this right of way has been increased from 20 to 60 meters.

4. That the lease is subject to the right of the government to make such rules and regulations for the use of water and the protection of the water supply, and for other public purposes as it may deem best for the public good. This is based on the premise that "the beneficial use of water shall be the basis, the measure and the limit of all rights thereto," and
5. That reserved from the operations of the lease shall be the right to use for the purposes of power any flow of water in any stream running through or by the land granted, the convertible power from which at ordinary low water exceeds fifty horse power.

The pertinent provisions of the Law of Waters,[11] referred to in the required lease contract, include those which expressly allow anyone to make use of water running through its natural and public channels for drinking, washing clothes, vessels and other objects, bathing and for the watering and dipping of horses and stock subject to the rules and regulations on water of the municipality. The law also provides that the right to fish from the shore belongs to the public, subject to the police and other regulations in force in this regard.

On the other hand, the other pertinent laws impliedly referred to, to which leases of foreshore lands are subject include the general provisions of the Civil Code and some recent Presidential Decrees. The relevant provisions of the Civil Code include those on easements and nuisance while recent Presidential Decrees related to foreshore lands are those which govern reclamation. These are discussed briefly below.

The Civil Code contains provisions regarding easements relating to water. Thus, the banks of rivers and streams, even if they are privately owned, are subject throughout their entire length and within a zone of three meters along their margins to the easement of public use in the general interest of navigation, floatage, fishing and salvage. Furthermore, estates adjoining the banks of navigable rivers, are subject to the easement of towpath for the exclusive service of river navigation and floatage. The Code further provides that if it is necessary to occupy lands of private ownership, the proper indemnity shall first be paid.[12] Compulsory easements for drawing water or for watering animals can be imposed only in favor of a town or village and after payment of proper indemnity.[13] The Civil Code provision on easement against nuisance is also pertinent. It provides that " . . . . every piece of land is subject to the easement which prohibits the proprietor or possessor from committing nuisance[14] through noise, jarring, offensive odor, smoke, heat, dust, water, glare and other causes.[15]

In connection with nuisances, another law, which is also of general application and therefore affects also the use and occupation of foreshore lands, is the Pollution Control Law or Republic Act 3931 enacted on June 18, 1964. This law created the National Water and Air Pollution Control Commission[16] and authorized it to perform the following functions, among others: first, to determine if pollution exists in any of the waters and/or atmospheric air of the Philippines and second, to make, alter, or modify orders requiring the discontinuance of pollution of water due to discharge of sewage, industrial wastes or other kinds of wastes.

Reclamation of foreshore lands, on the other hand, is presently governed by Presidential Decree No. 3-A[17] which provides that the reclamation of areas under water, whether

[11]The Spanish Law of Waters was enacted on August 3, 1866. A Water Code which would incorporate and update all the provisions of existing laws, including the Law of Waters has recently been completed by an inter-agency group consisting of representatives from the National Water Resources Council, National Irrigation Administration, Department of Justice.

[12]Article 638, Civil Code.

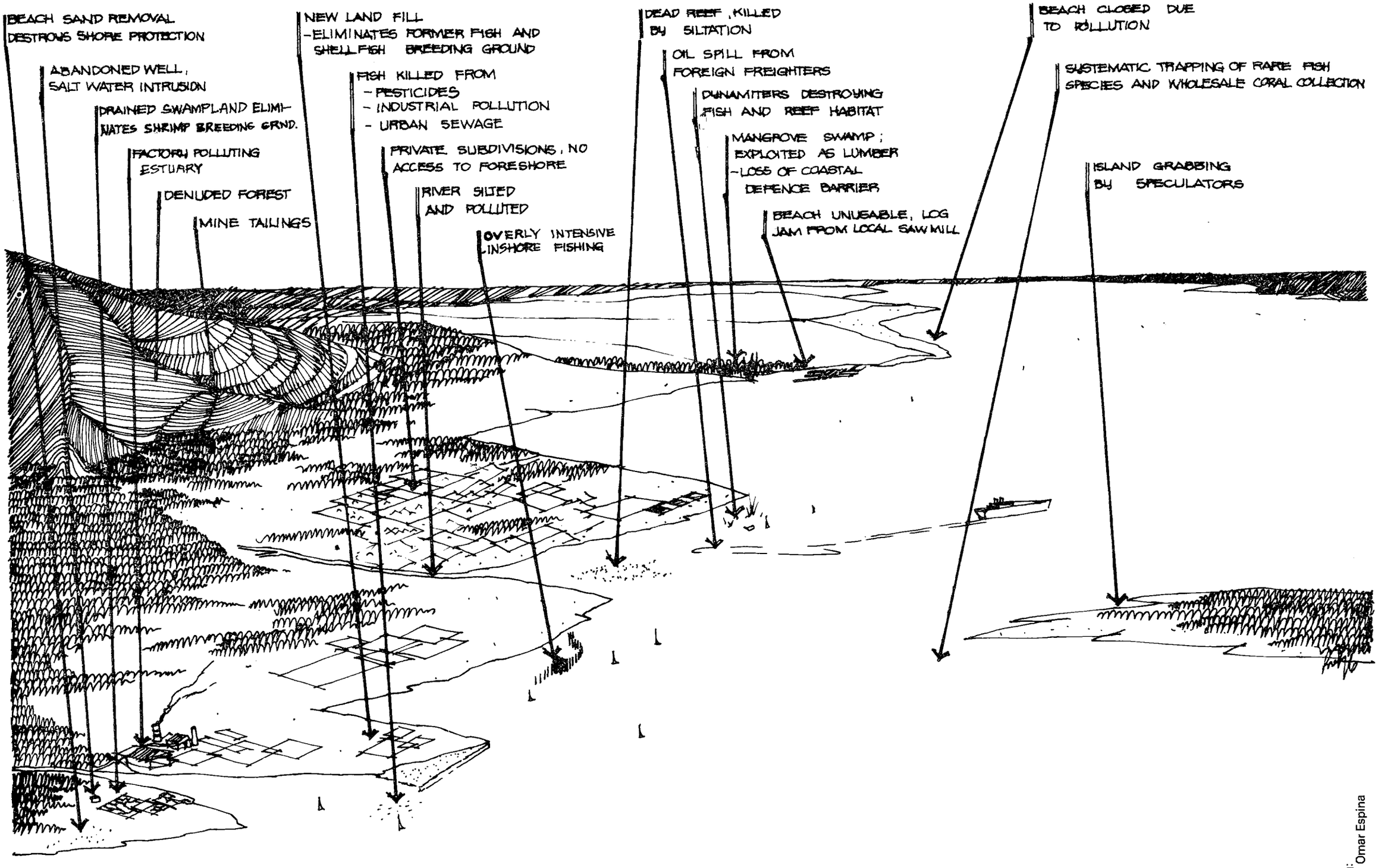
[13]Article 640, Civil Code.

[14]The New Civil Code defines nuisance as any act, omission, establishment, business, condition of property or anything else which 1) injures or endangers the health or safety of others, or 2) annoys or offends the senses, or 3) shocks, defies or disregards decency or morality, or 4) obstructs or interferes with the free passage of any public highway or street, or any body of water, or 5) hinders or impairs the use of property. (Title VIII, Article 694).

[15]Article 682, Civil Code.

[16]The Commission is now known as the National Pollution Control Commission.

[17]January 11, 1973. This Presidential Decree amended Section 7 of Presidential Decree No. 3 dated September 26, 1972 by adding the paragraphs above with the end in view of providing for the exclusive prosecution of reclamation projects by the Administration or by contract.

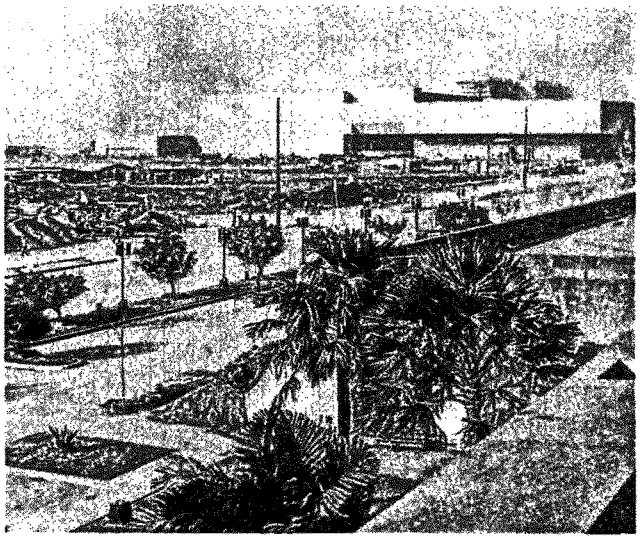


PROBLEMS & ISSUES OF THE COASTAL ZONE

Drawing:
Maxwell Omar Espina

foreshore or inland, shall be limited to the National Government or any person authorized by it under a proper contract and that all land reclaimed in violation of this shall be forfeited to the State without even the need for judicial action. Insofar as this affected subsisting contracts or contracts still legally existing or whose validity has been accepted by the National Government, the Decree provides that the National Government shall take over them on the basis of *quantum meruit* or proper prosecution of the project involved by administration. In effect, this Decree repealed Republic Act 1899[18] which authorized all municipalities and chartered cities to undertake and carry out at their own expense the reclamation by dredging, filling, or other means, of any foreshore lands bordering them and to establish, provide, construct, maintain and repair proper and adequate docking and harbor facilities as they may determine. Any and all such reclaimed lands were to be the property of the respective municipalities or chartered cities except that the new foreshore along the reclaimed areas shall continue to be the property of the national government.[19]

The Cultural Center complex, Manila. A whole new city is rising from totally reclaimed land on Manila Bay.



Problems Arising from Present Uses of Foreshore Lands[20]

Records of the Bureau of Lands show the following uses of foreshore lands to which lessees actually devote them:

1. Wharves and piers, including bodegas, warehouses, and related structures
2. Fishpens
3. Drydocking by small fishermen, including the drying of fishnets, fishes, etc.
4. Log ponds by forest concessionaires
5. Resorts and tourist rest houses
6. Family vacation houses, such as in Matabungkay, Batangas
7. Cocktail lounges and restaurants

These various uses are reflected in some 11,027 foreshore lease applications (FLAs) filed with the Bureau of Lands from 1904 to 1976. As of this year however, only 6,871 such leases all over the country are still subsisting.[21] In connection with the above uses, certain problems have arisen which have directed the attention of the administering officials to some areas of reform. This paper is however, only concerned with those areas affecting legislation.

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[18]June 22, 1957.

[19]As a consequence of this provision, all lands reclaimed by the municipalities or chartered cities, except those necessary for wharves, piers and embankments, roads, parks and other public improvements could be sold or leased under such rules and regulations as the municipality or chartered city may prescribe. It was only required that all proceeds derived from such sale or lease, and all berthing and other fees and such other earnings as the said local governments shall derive from the use of the port facilities and improvements shall be credited to a special fund which shall accrue first, to the sinking fund established, and second, any balance in excess of periodic sinking fund requirements shall be available for other permanent public improvements of the said local governments. (Section 4, Republic Act 1899).

[20]For this section of the paper, grateful acknowledgment is made to the following officials of the Bureau of Lands who shared with the author their valuable time and first hand knowledge of the subject matter: Atty. Ernesto Mendiola, Assistant Director; Mr. Sergio Herradura, Chief of the Reservation and Land Disposition Section; and Atty. Hector Fabros, Chief of the Research and Legislative Section, all of the Bureau of Lands. The author also had the opportunity of discussing the subject matter with the District Land Officers of the Bureau assigned in Zamboanga, Davao and Bulacan.

[21]There are no figures on the total hectarage of foreshore lands involved because no surveys have been taken by the Bureau of Lands.

These problems arising from the use of foreshore lands enumerated above could actually be subsumed under one main category and this is abuse in their use. This could be further sub-categorized into those relating to pollution and to access, both of which could be considered as affecting the public directly and in a very serious way.

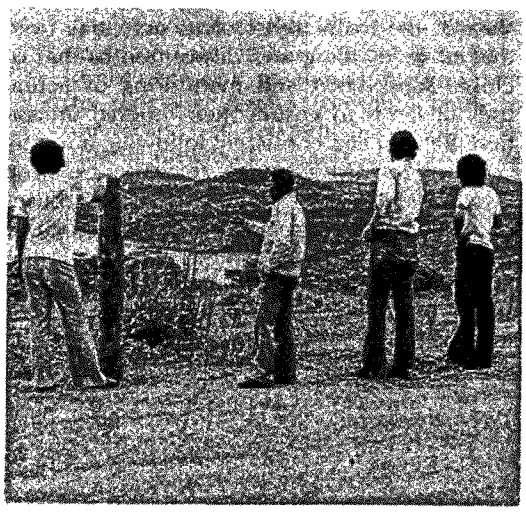
Many of the present uses of foreshore lands have led to some serious land and water pollution problems. These uses are mostly the commercial or industrial activities that emit wastes and by-products which are not properly disposed of, thus contributing to pollution of the air and the surrounding land and waters. Typical examples of these are lands used as log ponds and as wharves and piers, with all their accessory structures such as bodegas and warehouses. In Davao del Sur, for instance, several fishpond owners occupying lands adjacent to the foreshore lands being leased as a log pond have complained of outflows from the pond which have contaminated their fish ponds.[22] Activities arising from the use of foreshore lands as piers have affected the cleanliness and sanitation of the surrounding areas and furthermore have contributed to the noise and traffic in the vicinity. Even such seemingly harmless uses as beach houses and resorts have contributed to land and air pollution because of the careless disposal of both solid and other forms of waste by their guests or customers.

Access is another serious problem that has arisen from the inconsiderate use of foreshore lands. This refers to the restriction or even actual exclusion of the public from the free use and enjoyment of waters and beaches in the foreshore areas. This usually happens where the improvements made by the lessees leave no right of way to the public except through the portion leased by them and only after some form of payment by the public. This is especially true in the cases of beach houses and resort areas.

Many lessees who have devoted foreshore lands to tourist-related activities have fenced off their property with the declared purpose of protecting their improvements and facilities. The effect of this, however, has been to restrict if not actually exclude, the public from the free and untrammeled access to the surrounding areas of the foreshore lands, especially the sea or the beaches. Access to these by the public could usually be had only by paying their way to the resort houses even if they have no intention of using the facilities there but only wish to reach the natural waters of lakesides or seashores. To be able to bathe in some public waters, for example, some have to pay entrance fees to beach houses and resorts. Examples of these abound in Parañaque, Bulacan, Cavite, Batangas, Olongapo Bay and Zamboanga. In other cases, some owners of land adjacent to the foreshore areas have built their hotels in such a way as to restrict the public's access to the sea by appropriating almost the whole area constituting the foreshore lands. The sea, in fact, becomes part of the natural attraction of their hotels. Yet some of these hotels occupy part of the foreshore without even paying rentals for their use and worse, they even encroach illegally upon the public domain by extending the boundary lines of their property.

The actionable activities mentioned above, however, have not been limited to lessees or adjacent owners devoting their land to tourist related activities. Some fishpond owners or operators have been found to engage in similar unlawful actions. Many fishpond owners whose ponds adjoin foreshore lands and some lessees engaged in fishpond development have prevented fishermen from entering the fishing areas by fencing their property and leaving no

Barbed wire fence excludes the public from the free use and enjoyment of waters and beaches in foreshore areas.



[22]This information was provided by the District Land Officer of Davao in an interview at the Bureau of Lands.

means of access to the source of livelihood of this sector of the public. All these activities cited are unlawful in the sense that they are prohibited by existing legislation; in the case of pollution, by the Pollution Control Law, and that of access, by the general provisions of the Civil Code, and the Code of Waters. These acts are also prohibited in the lease contracts which, as mentioned earlier, make direct reference to the applicability of the general provisions of the relevant laws to the terms and conditions of the contract between the Bureau of Lands and the foreshore lessee.

Areas for Reform in the Legislation

The problems discussed in this paper provide an insight into the kind of legislative reforms that need to be initiated to rectify the abuses mentioned and to prevent their recurrence in the future. They point to the need to fill up some gaps in the present legislation and for the introduction of new provisions in existing laws. Basic to all this is the updating of the Public Land Act of the Philippines which is one of the oldest laws of the land that is still in effect having been originally enacted in 1936. While it has undergone several revisions[23] and has been amended several times, the amendments have been introduced on a piece-meal basis and there have been no attempts to re-examine the whole law and to re-establish the philosophy and rationale behind it. There is indeed an urgency to re-orient the perspective of this legislation toward the new approach to land—that is, as a major resource of the country and not as any ordinary commodity of commerce subject to the usual manipulations of the market.[24]

A change in the basic philosophy on land would also dictate that the Bureau effect a shift in the main thrust of its activities from that of land titling and disposition to that of closer supervision and monitoring of actual uses of lands to ensure their rational utilization. Regular and consistent follow-up after the grant of the lease would, for instance, keep lessees on their toes and would prevent abuses that now seriously endanger the quality and usefulness of foreshore lands, among other kinds of lands.

Other areas requiring legislative actions, after more careful study of their various aspects and implications, are the following:

1. Expressly and clearly providing in the implementing rules and regulations of the Bureau of Lands and in the contract of lease[25] signed with private parties specific provisions on the required manner for the use and occupancy of foreshore lands. The broad provisions of the new Civil Code and other general laws would need to be translated into more specific provisions appropriate to foreshore lands. For instance, the general provisions on health and sanitation, pollution, nuisances, easements and appropriate use of waters, have to be more clearly spelled out so that lessees become keenly aware of their responsibilities over the land. This is in keeping with the concept of stewardship over land, that land is, in fact, held in trust by the temporary occupant or owner for the public and that therefore his private rights over them are subject to the greater interest of the people.

2. Incorporating additional restrictions to safeguard and maintain the natural qualities of foreshore lands. The details of these should also be incorporated into the implementing rules and regulations of the Bureau and whenever possible, in the lease contract. For instance, specific requirements such as installing or introducing anti-pollution control devices should be clearly provided.

3. Re-examining the amount of rentals that lessees are charged, which according to knowledgeable officials, has the effect of discouraging the introduction of improvements.[26]

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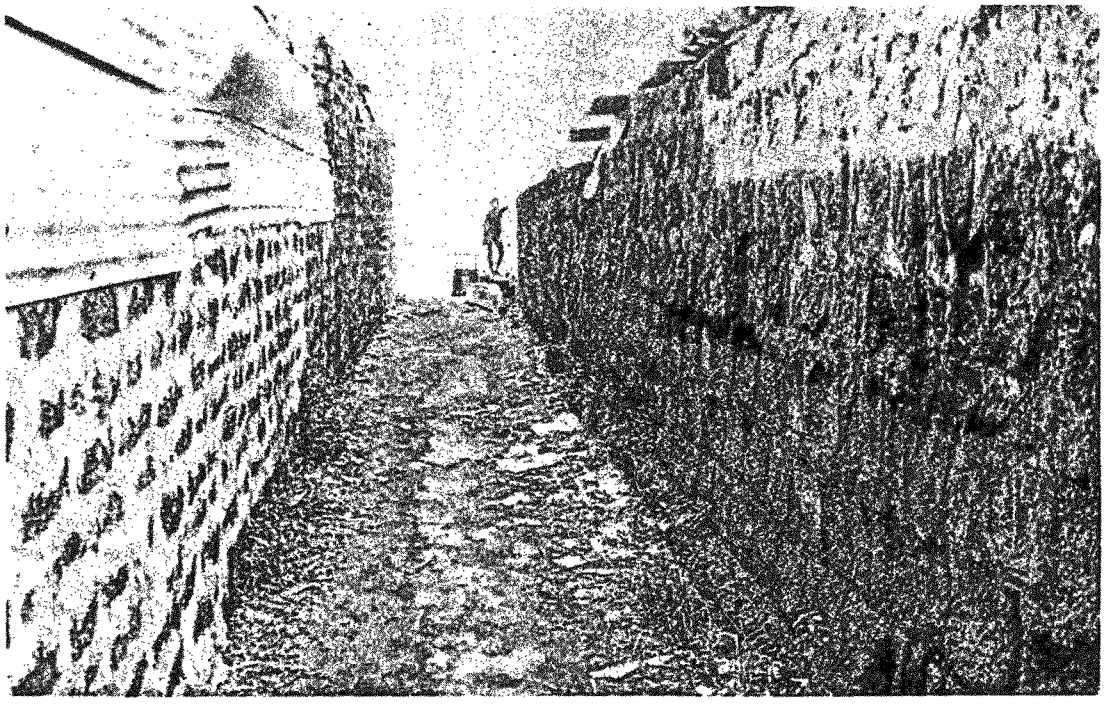
[23]This law was amended twice by two other Commonwealth Acts in 1939 and 1941 and by several Republic Acts from 1947 to 1964.

[24]In this regard, and in keeping with the President's declared intention to merely lease public lands, there is a need for the Bureau of Lands to abandon the practice of allowing the sale of foreshore lands in special cases.

[25]The writer has been informed that the Land Management Division of the Bureau of Lands is already undertaking the revision of the form and contents of the lease contracts.

[26]Republic Act 2694, already referred to earlier in this paper, imposes an additional one percent tax of the appraised or reappraised value of improvements over the three percent tax of the appraised or reappraised value of the land. In this connection, a reappraisal of the value of the land or the improvements is made every ten years. There is a proposal by the Bureau of Lands that the capital value of the land should be made the basis for fixing the rental to be collected from the lessee.



A "road" to the sea?

4. Providing better incentives to improve the collection of rentals for leased foreshore lands. At present, these rentals accrue to the general funds since special funds have already been abolished by Presidential Decree No. 711, dated May 27, 1975. At one stage in the past, it was proposed that said rentals be utilized to construct district offices of the Bureau of Lands. This, it was thought, would not only prompt more efficient collection but also lead to the materialization of their project to provide decent district offices.
5. Adopting a more practical and efficient procedure in the processing of applications for leases of foreshore lands. More specifically, there is a need to:

   a) Study which agencies should be consulted and drawn in the process of deciding whether to keep foreshore lands in government hands for public use. As it is now, applications for lease of these lands are referred to the Customs Commissioner, the Public Works Engineer, and the Regional Director of Public Highways to find out whether any of these agencies has any need for the land applied for. The regional officer of the Department of Tourism, if it appears necessary, should also be consulted to ensure that these lands are not needed for tourism purposes. Perhaps because of the absence of any provision to this effect, the Department of Tourism has found it expedient, if not necessary, to request the President to proclaim certain foreshore lands as necessary for tourism purposes. Adequate measures should, however, be adopted to ensure that this does not result in too much bureaucratic red tape.

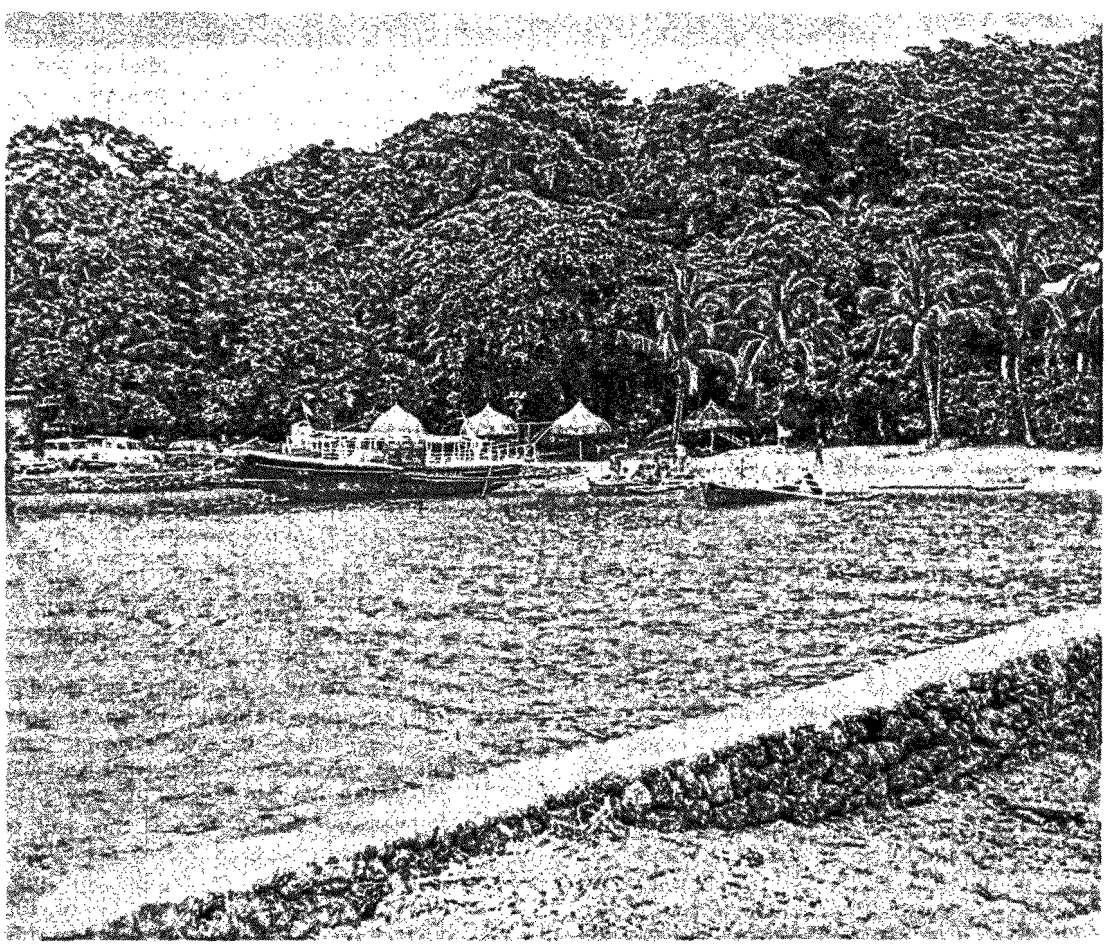
   b) Examine the feasibility of decentralizing the authority to grant permits or leases to the District Land Offices considering that the granting of patents to lands has already been delegated to them. While this will to a large extent expedite and facilitate action on leases of foreshore lands, efficient and rational exercise of this power would require an inventory of

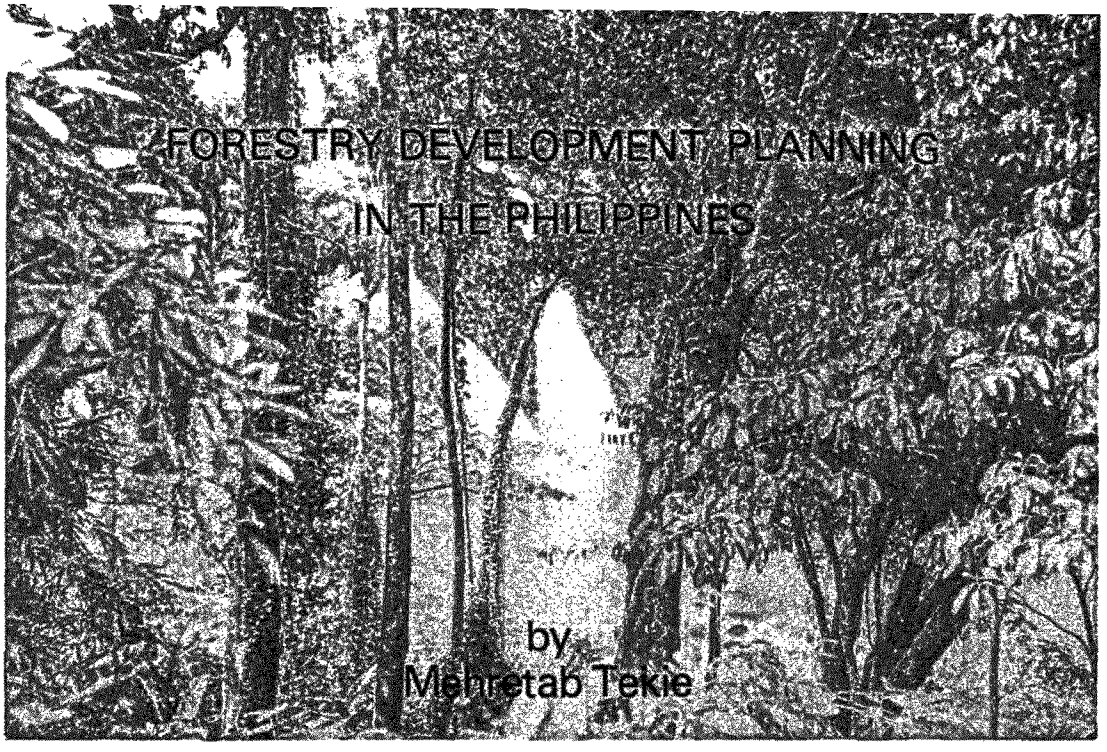
foreshore lands to identify those which are disposable and those which are not, using national criteria and standards rather than viewing them from purely local and parochial interests. For this purpose it would be necessary to adequately staff the District Land Offices and to properly train their officers.

Use of foreshore lands must reconcile public and private interests with development and ecological considerations.

Conclusion

This paper is a modest attempt to look at one category of lands which has attracted much of the intensive land developments today. Foreshore lands have become the site of much land activities not only because of the growing scarcity of lands in general, but also because of their naturally attractive features including their location and their capacity to support a variety of uses. Perhaps it is precisely because of the very same reasons above that there is an urgent need to give this category of our land resources a more serious look. Their re-examination should however be done in relation to other categories of land, whether disposable or not disposable. Only a total approach to land resources management and disposition would produce desirable and satisfactory results, reconciling as it does, public and private interests with development and ecological considerations. ●





Introduction

Forest land use is one aspect of land use planning that has become increasingly important in the Philippines as the nation seeks to grapple with the problem of forest utilization, protection and conservation.

Development of forest resources in the past has always been oriented towards utilization and never towards protection and conservation. Forest management practices were never initiated since the areas being logged over were mostly cleared for agricultural purposes. Hence, it was considered useless to regulate cutting, much less to initiate conservation measures.

With the increasing demand for logs for export, tremendous pressure was exerted on forest resources and as a consequence, wasteful and destructive operations became widespread. Not only was much timber destroyed but there were also a lot of abandoned logs, and much waste from the operations of sawmills and plywood plants. Vast upland areas were denuded and still lie idle with no productive use. Rivers were laden with soil eroded from the highlands. Flooding and irregular stream flow were regular events in all watersheds where extensive logging has occurred.

Population growth is forcing some farmers onto ever steeper slopes which are unfit for farming. Trees are disappearing so fast on hillsides and mountains that landslides which destroy lives, homes and crops occur more and more frequently in these areas. As soil erosion accelerates, the land becomes less productive at a time when more food is urgently needed to supply the requirements of a rapidly growing population.

This paper makes a brief assessment of forest resources, general forest land uses, and current forestry management practices in the Philippines. Then it argues the need for forestry planning as an integral part of national and regional planning. It points out the gaps between sound forestry planning concepts and objectives and actual forest management practices. To fill these gaps it indicates directions, strategies and priority areas that forest land use planning might take with the objective of rationalizing and improving the exploitation, utilization, protection and preservation of forest lands as a vital element of the national patrimony.

Existing Situation of the Forest Sector

Forest Resources

As of June 1975, the forest resources inventory of the Bureau of Forest Development showed that of the total 30 million hectares of land area, public forest was about 17 million hectares or roughly 57%. Within the public forest area, nine million hectares have been proclaimed timberland while the remaining eight million hectares have yet to be classified as to their final use.

The commercial forest is roughly 7.4 million hectares consisting of 7.05 million hectares of the dipterocarpus type; 120,000 hectares of mangrove; and 20,000 of pine forest.

The currently classsified non-commercial forest has an area of 4.72 million hectares broken down into 2.87 million hectares of dipterocarp reproduction brush; 1.73 million hectares of mossy forest; and 2,000 hectares of bamboo.

By geographical distribution, the biggest proportion of the national forest area is found in Luzon with 39.10% of the total forest. Mindanao ranks second with 38.13% followed by the Visayas with 13.41% and Palawan with 9.36%. In terms of the percentage of forest cover for each island these are as follows: Palawan, 88%; Mindanao, 54%; Luzon, 42% and Visayas, 31%.

Timber Volume

The total volume of standing timber, 15 cms dbh and over, is estimated at about 1,695.5 million cubic meters. This is of the dipterocarp type which accounts for 1,544.9 million cubic meters or 91.1% of the total; mangrove type, 10 million cubic meters or 0.6%; pine type, 18.6 million cubic meters or 1.1%; and the mossy and unproductive type, 122 million cubic meters or 7.2%.

Timber Production

The total area of 9.63 million hectares was under license during 1974-1975 with a total allowable cut of 20.36 million cubic meters. The actual production for the same period amounted to 7.33 million cubic meters or 36% of the total annual allowable cut granted.

Mindanao continued to be the country's principal timber producing region, supplying 5.37 million cubic meters or 72.64% of the total log production during FY 1974-1975. Luzon accounted for 1.40 million cubic meters or 19.14% of the national total. The Visayas supplied 0.60 million cubic meters, or 8.22% of the total production.

Forest Products Exports

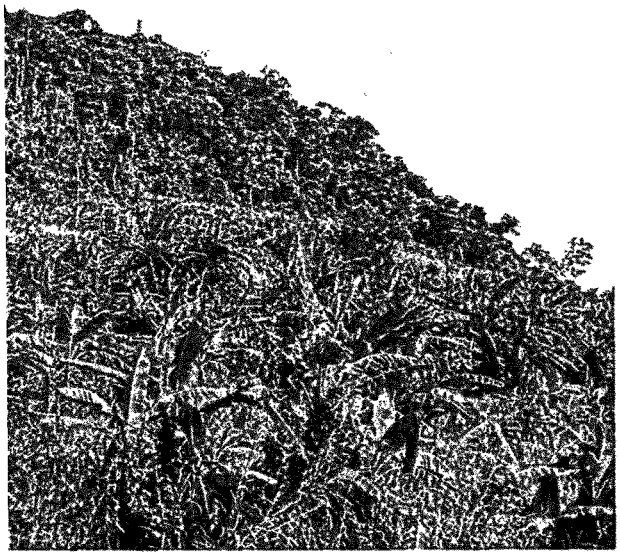
The total log export for FY 1974-1975 amounted to 4.58 million cubic meters which is 62.5% of the total log produced. This export item earned $198.33 million for the country.

Japan maintained its position as the top importer of Philippine logs accounting for 67.11% of the total log export. Taiwan is second with 17.50%, followed by Korea, 6.10%, and France, 3.89%.

Forest Exploitation

All in all, the country burns or cuts 170,000 hectares of forest every year, or about one tree

[1]Source: BFD—Mimeographed paper "Forestry Plan" (Diliman, Quezon City: Bureau of Forest Development, Planning and Evaluation Division) p. 8.



An oasis of tropical rain forest, Rizal province, Philippines.

in every three minutes. For every eight hectares lost only one is reforested.[1]Despite the imposition of diameter limits, indiscriminate cutting of trees by careless loggers is rampant rendering logged-over areas practically devoid of healthy trees for future harvest, if not bare of forest cover altogether.

When practically no residuals are left after logging and no replanting is done, the situation becomes easy for kaiñgineros to enter and burn the area. The current estimate is that about 80,000 hectares of forest land are lost to kaiñgineros every year.

The balance between forests and population has also become critical. In 1970, there were 2.4 persons for every hectare of forest. By the year 2,000 the ratio will reach seven persons per hectare of forest.

Methods of Logging

1.) *Selective Logging*. As practiced in the Philippines, selective logging is simply systematic removal of the mature, over-mature and defective trees in such a manner as to leave an adequate, uninjured number of healthy residual trees of the desired species. This is necessary to assure a future crop of timber and forest cover for the protection and conservation of soil and water. Under Philippine conditions, this is considered the most suitable method of logging. This system is an adaptation of the selection system of silviculture as defined and generally recognized in international forestry circles.

Selective logging consists of: (a) marking and consecutively numbering the trees to be left and marking the tree to be cut including the directions of its fall; (b) application of logging techniques designed to minimize damage to the trees designated to be left; (c) supplemental planting on areas unavoidably cleared in the process of logging and instituting timber stand improvement on logged-over areas to improve the quality of residual trees.

(2.) *Logging Techniques*. Generally used in the country are track, skyline, and gravity systems. The use of a combination of any of these systems, however, has been observed where the interplay of topographic limitations, density of the stand, and the objective of the management demand the employment of such system combination.

Processing and Research

Wood processing and utilization is still in its initial stage. There are at present 25 completed and four on-going projects on primary conversion, 40 completed and five on-going on secondary conversion, and 15 completed and five on-going on wood waste utilization conducted by private companies, the Bureau of Forest Development, UP College of Forestry, and the Forest Products Research and Industrial Development Commission (FORPRIDECOM).

Specifically, researches are being conducted on veneer manufacturer, plywood manufacture, flue and gluing, and wood lamination.

The Forest Research Institute and FORPRIDECOM are continuously searching for the varied uses of wood. Today sawdust in the sawmill is being used for making hollow blocks for low-cost housing material. The leaves of Ipil-Ipil are used not only for feeds but also for commercial fertilizers. Species with broad leaves are being investigated as to their suitability for pulp to minimize the yearly importation of pulp and paper waste for paper products manufacturing.

Reforestation of Denuded Areas

Presently the rate of forest destruction far exceeds afforestation and the planting of fast-growing tree species is being recommended by

the Bureau of Forest Development. At present, the area planted to these species in various parts of the country is about 8,320 hectares. Another target of massive reforestation are the critical areas within the primary watersheds in the country totalling about four million hectares.

Another form of reforestation being done is the so-called enrichment planting. This is done immediately after logging operation around the logging area, where there are heavily damaged trees. These trees are replaced by fast growing species that can easily grow in spite of the soil having been heavily destroyed.

Watershed Management and Erosion Control

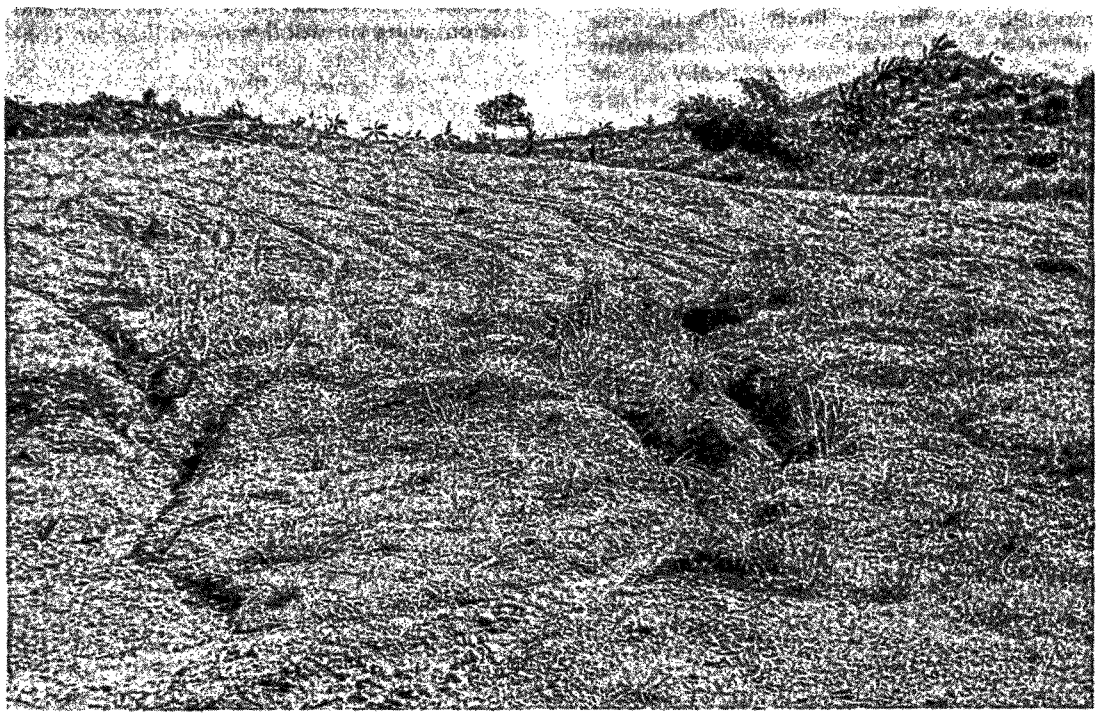
This is relatively new in forest management in the country. This new type of management is being stressed to avert the problems of floods, low stream flow, and high sediment loads of rivers.

Surveys of major watershed areas like Upper Agno, Upper Pampanga, and Upper Cagayan rivers reveal that 25% of their areas are subjected to severe and very severe erosion. It is alarming to state that Pampanga and Agno rivers yield the highest sediments among the big rivers in the world. The sediment yields are 11.4 and 44.6 tons per hectare per year, respectively, compared with those of the Mississippi River in the US which is only 0.5 ton per hectare per year; Mekong River in Vietnam, 1.5 tons per ha/yr; Irrawady in Burma, 8.2 tons per ha/yr; and Ching River in China, 7.19 tons per ha/yr.

Under this condition, soil erosion control measures are being implemented such as planting trees and constructing engineering structures to supplement the vegetative cover. But these measures are far from adequate.

After assessing the existing forest resources, and taking stock of what has been done or left undone by way of putting these resources to serve human needs, this paper shall endeavor to indicate priority areas where policy makers and forest land-use planners can cooperate to better correct the misuse, prevent the abuse, guide the re-use, and correct the over-intensive or under-intensive use of forest lands. What follows therefore is a discussion of some broad recommendations and strategies for the development of forest resources.

The end-product: gully and sheet erosion.
The cause: deforestation.



Hillside agriculture on what used to be forest land

Strategies for Development in the Context of Regional Planning

Land Classification and Mapping

Fundamental to any comprehensive regional planning process is the accurate classification and delineation of forestlands. Eight million hectares of forestlands are unclassified and much that is classified (nine million hectares) have not been done in sufficient detail.

This activity involves the demarcation of the boundaries of forestlands on the ground as well as on maps based on land capability surveys. There should be standardized sets of maps with scales and mapping symbols common to all government agencies. Aerial photographs should be taken every five or ten years to update the forest land use and provide a valuable record. Remote sensing imagery could also be used for mapping and evaluation purposes.

National Forest Inventory

Forest development planning and policy decision making require reliable information and up to date inventory of forest resources. This is essential to assess the effect of past and existing policies so that necessary changes could be effected.

Timber Concessions

Proper forest management is hampered by the fragmented and disorganized nature of timber concessions. Many small scale loggers who lack the capital and technical knowhow to practice proper forest management should be discouraged. Large scale concessions should be encouraged according to the Bureau of Forest Development's guidelines.

The Bureau should follow up the performance of all timber licensees to make sure that they adhere to good forestry practices and comply with selective logging requirements.

Watershed Protection

Watershed management should be given a high priority to prevent soil erosion, sedimentation and flooding of settlements. Watershed management should be a basic requirement of all activities taking place within the forest, giving priority to protective measures.

Activities involve both structural and vegetative measures such as bench terraces, riprap, checkdams, grass seedlings and wattlings. Degraded watersheds of river basins, which are the sources of water for hydroelectric power, irrigation, industrial and domestic uses should be priority areas for these activities.

Forest Protection

Generally speaking, the Bureau of Forest Development either through sheer neglect or lack of manpower has failed to prevent bad loggers and kaiñgineros. The forest zone lines are continually shifting and adjusting to encroachment.

Forest destruction could be checked by intensive forest patrols. The patrol, in addition to preventing forest destruction should report any incidence of fire, pests, and diseases in the forest. Since aerial patrols are very expensive, the present foot patrol foresters numbering 780 will have to be augmented.

Shoreline Protection

Until very recently mangrove swamps were seen only as timber resources and exploited for firewood, lumber, and similar purposes. More recently, mangrove trees have become recognized as not only protecting (and extending) the shoreline against erosion but also as rich nurseries or breeding grounds for several varieties of shellfish and other marine organisms. Further depletion of the mangrove resources should only be undertaken following evaluations of its important role in conserving and developing aquatic resources.

Afforestation

The vast denuded lands ought to be reforested to increase the timber supply as well as for watershed protection, and other environmental impacts. The Bureau of Forest Development has plans to reforest 1.36 million hectares of public forestlands by the year 2,000.

Kaingin (Shifting Cultivation) Management

More than three million hectares of land are occupied by kaiñgineros. A census of all forest occupants should be taken and those who occupy land too steep for permanent cultivation should be assisted to stabilize their occupancy elsewhere.

National Parks and Wildlife Management

There are now 56 national parks, nine of which have not yet been surveyed. A survey of the extent of parks including an inventory of their resources and human habitations ought to be done first. Then plans for amenities like shelters, comfort rooms, directional signs and other interpretive devices should be made.

Forest Products Manufacturing

With the recent ban on raw log exports an expansion of the forest based industries will definitely occur. This broadening of forest products manufacturing will have important implications for regional planning. The infrastructure and labor requirements will further encourage economic development.

Capital Outlay for:

a. *Roads*—will be essential in forest protection, reforestation, and kaingin management. The road network will facilitate intensive forest development, management and protection;

b. *Equipment*—for communications, transportation, forest nurseries and surveying needed by the foresters if they are to effectively accomplish their job.

Action Programs for Forest Development

The vital role that forest resources play in the economic and social well-being of the nation is no doubt recognized by the Philippine government as evidenced by the enactment recently of the Forestry Reform Code. It was under the circumstances described earlier in this paper that the Forestry Reform Code was conceived and enacted. The general provisions of the law include the promotion of wise utilization, conservation, and development of forest resources including associated services related to water supply, recreation and wildlife preservation, the maintenance of a wholesome ecological balance, acceleration of the reforestation of denuded lands, and the creation of a stable forestry agency.

The agency charged with implementing the provisions of the Code and other pertinent forestry rules and regulations is the Bureau of Forest Development under the Department of Natural Resources. In the short time that the Bureau has been in existence, it has intensified its land classification efforts to identify priority areas for timber, pasture, forest reservation and watershed protection. The Bureau has also plans to reforest denuded lands, to enforce licensing measures to stop indiscriminate cutting of trees in public forests, and to improve forest occupancy management.

To further intensify the Bureau's efforts at improving the management of forest land use in the country, the following specific action programs are recommended:

1. Make use of all opportunities to encourage full awareness and understanding of the environmental effects of man's actions on forestland to present and future generations. This can be done by:
   a. Dramatizing cases of environmental damage and poor forestland use by means of field trips and guided tours with attendant press, radio, and television coverage.
   b. Requiring forestland use education as part of elementary and secondary school curricula.
   c. Establishing regional forestry centers.
2. Develop forestland use guidelines to identify compatible and incompatible uses. Along this line, efforts should be taken to:
   a. Classify forestland into commercial, non-commercial, forest reserves, parks and so forth.
   b. Designate critical areas of environmental concern such as watershed areas for incorporation in the forestland use guidelines and criteria.
3. Refine the store of information such as soil, geology, slope, plant type and associations, wildlife, and other related forestland use information. There should be a continuous and sustained effort to expand and update forest resources inventory and to prepare maps including aerial photos and remote sensing imagery at reasonable time intervals.
4. Improve the management of forest resources through stricter enforcement of licensing laws, rules and regulations as well as closer supervision of the operations of licensees, lessees and permittees. This will require the hiring of additional foresters as earlier suggested, and evolving a continuing manpower development program to maintain a strong, effective and efficient forestry service.

Conclusion

Tremendous possibilities for the wise exploitation and utilization of the country's forest resources exist if forest land use programs are properly planned and coordinated. The Philippine government should continue taking longer strides in this vital aspect of national and regional planning inorder to better manage its vast forest resources. Forestry should, therefore, be treated as a significant component of all regional plans for all regions or provinces containing forest lands. ●

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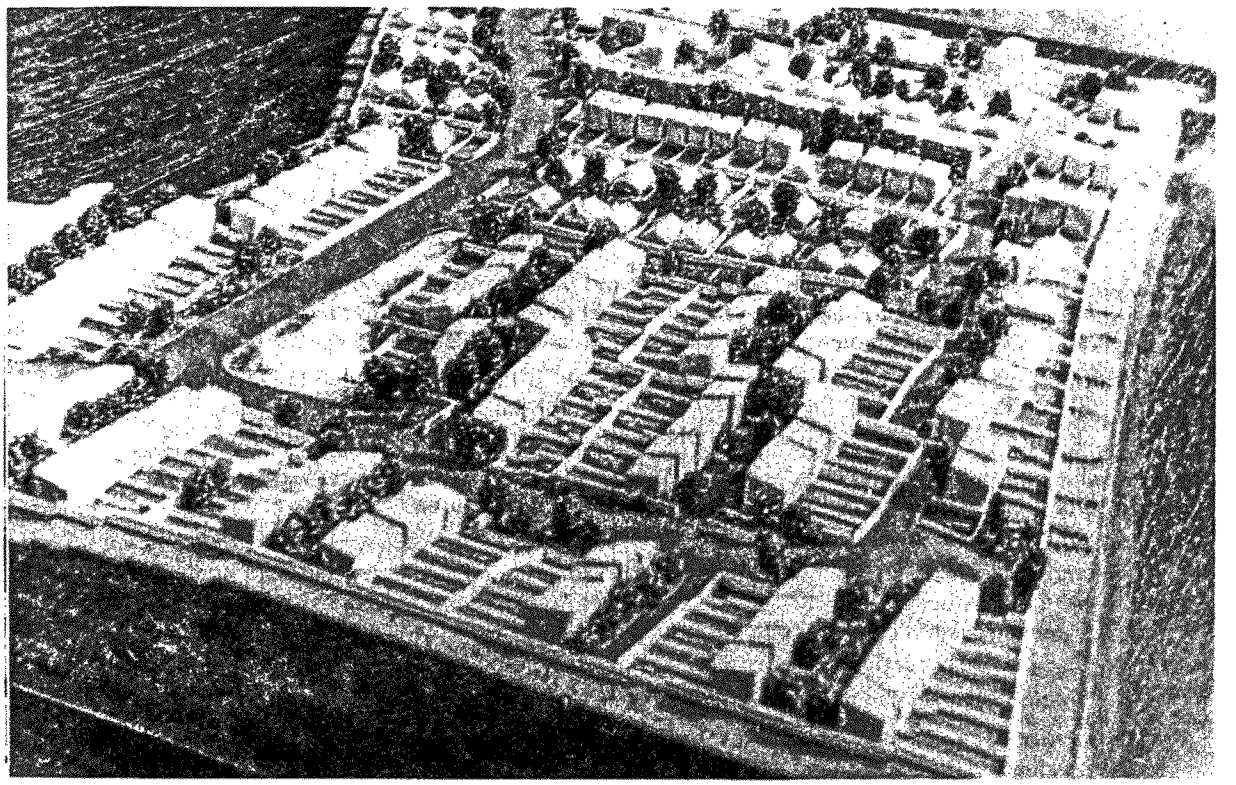
ECO-SETTLEMENTS: An Alternative Solution For Human Settlements

• A. Bruce Etherington

Economic and energy constraints which now prevail throughout most of the world suggest that it would be timely to re-evaluate human settlements methodology in order to maximize new and existing settlement resources. Commencing with the most essential elements, human settlements may consider as valuable resources human energy and wastes, and the land upon which the settlements are built. Beyond those basic considerations are the additional assets of human ingenuity, acquisitiveness and the capability to act in concert to achieve communal goals.

In planning human settlements, these factors form the basis for a methodology which attempts to integrate all individual and common assets in a comprehensive manner. The term



"eco-settlement" is intended to describe the high level of interdependence of human and natural resources which must be developed in order to maximize returns to the settlement as a whole.

Ideally, an eco-settlement should be able to create and sustain itself by using its own resources. Practically, present dependence on technology and commerce makes a return to such a simplistic and natural life style impracticable. Instead, methods of modern technology and commerce must be adapted to fit the limited resources usually available in squatter and slum communities. But in order to reduce dependence on external resources, considerable community and individual self-help at all levels of internal development are required.

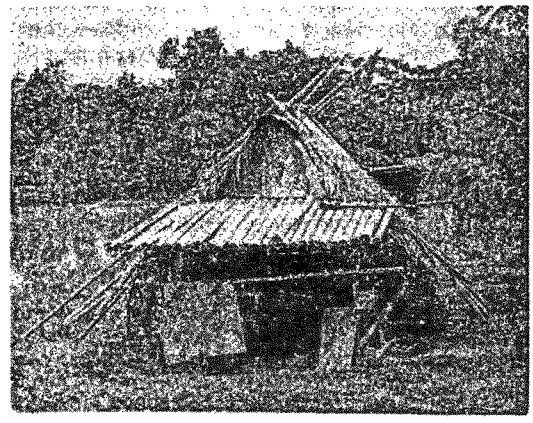
Briefly stated, the model integrates at the community level all social and physical factors which exist within the group of intended settlers and on the site of the proposed settlement. Analysis of physical site characteristics must precede physical planning. Grades, contours, natural collection basins, soil characteristics for agricultural and construction sites, annual rainfall, local eco-systems and assessment of site resources for housing and infrastructure construction materials as well as possible commercial products must be inventoried. Preceding any social planning of the community there must be an analysis of the composition, characteristics and origin of the intended settlers. Cultural traditions, skills and educational backgrounds must also be catalogued. Finally, implementation of resettlement or rehabilitation must proceed in stages which are within the self-help capability of the intended settlers.

Physical Planning

Before commencing construction, an overall plan for the entire settlement should be made particularly to ensure that ground drainage requirements are met. This will result in a variety of settlement patterns in which the existing ground slope or slopes will dictate the overall plan of the settlement. Rainfall runoff can then be collected for irrigation or fish farming in ponds located at the lowest point of the subdivision site. Under this concept, the entire settlement can be considered as a catch basin for trapping and holding rainwater over dry periods. Also under this requirement, the settlement will assume a character, circulation system and topographical configuration which may differ considerably from those of conventionally planned communities. Eco-settlement environments, therefore, may tend to be more rural in character and less crowded than conventional subdivisions but should contain more easily accessible community open spaces.

The basic unit in eco-settlement planning is the compound whose total population may be determined by a combination of factors including time construction limitations, cultural affinities, space available, familiar structure and so forth. Generally, compounds may range in size from five to twenty families and an important criterion for their size would be the largest number of families that can cooperatively complete the necessary common infrastructure, housing and agricultural preparations for themselves while taking into account a reasonable goal achievement—in other words, a time elapsed formula. That is, completion of infrastructure and agricultural preparations within the compound, the construction of a house for each family in the compound and infrastructure external to the compound for which the compound may be responsible should not tax the morale of the participants through an excessively long period of construction.

Configurations of compound plans should approximate as closely as possible a square with long narrow lots fronting both sides of a common lane. This arrangement assures minimum infrastructure costs and permits row housing, duplex or triplex housing for economies in house construction. It also provides security within the compound since all houses are visible from any single one and may be watched by one resident while the rest of the compound population is absent. Security may be further strengthened by surrounding each compound with a high wall and by providing gates where the compound lane exits onto the main road.



Orientation of compounds should take into consideration existing gradients so that the lanes may act as drainage channels to carry surface water to the main road. Each compound has, in addition to house lots, a multi-purpose area, enclosed with the compound walls and fronting the road which serves the compound. The multi-purpose space may be used for commercial (sari-sari, etc.) or leasehold purposes to provide additional revenue to the compound residents. Alternatively, multi-purpose spaces might be used as compound recreation space, nursery, cottage industry work area, and so forth.

To avoid the monotony in design often associated with subdivisions, lot widths may vary thus permitting various combinations of row housing, duplexes and detached houses to be built side by side. In all cases, however, lot area should be sufficient to include an area for the house, a parking area, and a garden area of sufficient size to supplement the food requirements for a family of six up to 20% of carbohydrates and 25% of protein requirements, respectively.[1]

Infrastructure/Sewerage/Drainage and Irrigation

Since the settlement infrastructure is intended to be constructed through self-help, on-site materials and unskilled labour must be utilized. Construction of infrastructure can be divided into that common to the entire settlement (roads, community facilities, etc.) and that internal to each compound. A reasonable division of labour suggests that each compound should complete its internal and contiguous infrastructure and that community-wide facilities be assigned on a pro-rate basis throughout the entire settlement.

Since each house will be equipped with its own rainwater collection, storage and purification system as well as a self-contained mouldering or anaerobic toilet digester, no sewer or water lines are required for the community thus effecting considerable savings in subdivision development costs. Drainage and irrigation are linked together in a recycling process in which all surface water is collected and carried via compound lanes and main roads to reservoirs located at the lowest points in the community.

To carry the surface waters effectively to the reservoir(s), both lanes and roads have a V section with the lowest part of the road in the center. In times of heavy rain and floods, the V configurations act as water channels to carry off heavy downpours of rain quickly without flooding adjoining private properties. To collect refuse and dirt runoff, the road system has a covered channel at the center of the road.

The reservoirs, in addition to holding water during dry seasons, also precipitate out solids collected during the drainage portion of the cycle. The cleansed water from the reservoir is then pumped by wind-powered water pumps to the highest portions in the community where it is introduced into the channels in the compound wall. The compound and lot block walls are of a special channel-shaped configuration that permits them to act as aqueducts. Using gravity, water in the compound and lot walls flows past the garden plots of each house where it is tapped for irrigation purposes. Surplus water continues past the garden plots until it reaches compound walls fronting on the landscaped main roads where it automatically irrigates all plant materials along the roadside. Acting in reverse, the lower part of the compound and lot walls become drainage aqueducts to carry off surplus surface water to the main road drainage channel.

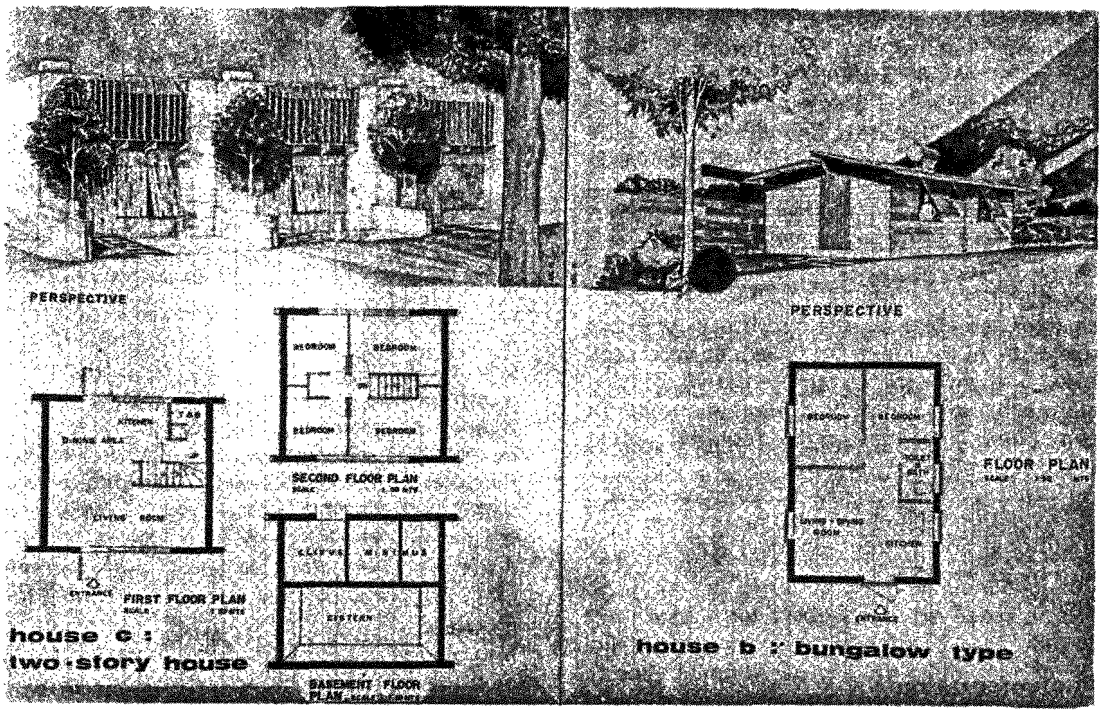
Housing

The design and construction of the housing units should meet the following criteria:

1. Designed for resistance to fire, earthquake, and typhoon conditions.
2. Fabrication and erection by unskilled (self-help) labour.
3. Secure against intruders.
4. Self-contained toilet, cooking and ablutionary facilities.
5. Minimum ground coverage for required floor area.
6. Separate accommodation for adults and children.

Two basic types, a bungalow of 35 square meters containing two bedrooms, bath and kitchen, and sala/dining room and a two-storey house of 50 square meters containing four bedrooms, bath and kitchen, sala and dining room, were developed to meet the above criteria. Bungalow sleeping accommodation is four to six persons while the two-storey model has sleeping accommodation for six to eight persons. Costs are 6,500.00 pesos (US$900.00)

[1]Experimental garden plots designed and cultivated by students of the University of Hawaii have replicated conditions in urban Manila. It was determined that approximately 45 m^2 was required to meet the specification mentioned above.



for the bungalow and 7,000 pesos (US$1,000.00) for the two-storey model.

A simplified concrete interlock system is used for walls, floors and roofs. All components for the system are fabricated on site using simple portable moulds which can be modified by inserts for different block designs. Time for construction including plumbing, wiring and interior carpentry of bungalow is 80 man-days and 90 man-days for the two-storey model.

Rainfall trapped in the roof is stored in a container of 2,000 gallons capacity under the house. Daily water needs are provided by pumping with a small hand pump to a roof top filter and storage tank from where the water flows by gravity to the various fixtures.

Sewerage is disposed of either by using a mouldering pit toilet or anaerobic digester which produces methane gas as a by-product. Both systems provide a constant supply of fertilizer free of pathogens for garden cultivation.

Socio-Economic Considerations

Economic well-being of the model settlement, to be successfully realized, will require a cooperative self-help organization sustained by some form of external financing and advising. Internal supervision of economic activities would also require input from community representation in all likelihood drawn from political/administrative organization of the settlement. Furthermore, manpower development through technical education and adaptive technology should be integrated into the socio-economic system.

It might be advisable to maintain accurate records of goods and services imported into and exported from the settlement. With accurate records, the settlement might be treated as an economic unit utilizing input-output analysis as a method of determining whether the community is, in fact, sustaining itself economically. (Input, of course, would have to include estimates of wages earned outside the community and so forth.)

Export potential, the kinds of goods to be produced and services offered both internally and externally, require considerable research and analysis by expert advisers in consultation with community leaders.

Essential to successful economic and social development of the community is effective and responsive government. A possible organizational/political hierarchy might include elected representatives from each compound sitting at a council of the community. Officers of the council should then be elected from amongst the councilmen. Because compounds are expected to be unequal in size, however, representation would not be equally divided amongst the total population. For this reason, an intermediate grouping into blocks of equal size with block representatives sitting on the council might be more representative. Blocks, of course, would include a variable number of compounds making up the required voting population.

The national barangay system, because of its traditional and current political status, could also be explored as a possible form of government.

Implementation

An untested and critical phase of eco-settlement development is the implementation through self-help of resettlement or rehabilitation programs. Support of the settlers must be considered essential to a successful project. For this reason, the sequence of steps necessary to accomplish the resettlement process should be very carefully planned in order to achieve the necessary degree of enthusiasm and momentum amongst the settlers.

A possible sequence could be.

A. Planning
   1. Survey of communities
   2. Educational seminars
   3. Land simulation gaming
   4. Plan making at house and community scale
   5. Mechanisms for carrying out the resettlement process
   6. Finance

B. Realization
   7. Acquisition of skills
   8. Construction of houses and compounds
   9. Construction of community facilities and infrastructure.

Community Survey, A social survey of the existing community, in addition to providing the necessary bio-data information regarding family structure, background, income and so forth, can be a useful tool in assessing aspirations, needs and community resources. As part of a standard procedure, the survey format may be coupled to a computer program so that survey results are quickly available in a standard form, thus allowing comparison of squatter settlements on an intra- and extra-national basis. The standardized survey deals initially with family bio-data, economics, existing housing characteristics and facilities, construction or rent costs, and land tenure. Additional information sought includes the possibility of family contribution to community development and cataloguing of construction and administrative skills that may be utilized in community development. Subjective-projective questions relating to the settler's qualitative assessment of their existing neighborhood and house, their possible improvement, and the degree of tolerated intra-family sharing of such facilities as toilets, water sources, cooking fires and bathing facilities provide useful information for planning the new community. Preference may also be determined for type of housing such as high-rise, detached and so forth.

Family scale data must be supplemented by information on community scale organization, political organization, facilities and services such as meeting hall, garbage disposal, drainage and sewage, fire protection, land registry and roads. These must be recorded and evaluated as possible tools for use in the self-help process.

Seminars. Since the settlers are expected to participate in all phases of planning of the new community, orientation seminars on community physical, social and economic planning might assist the settlers in arriving at planning decisions. Previous experience in this phase of community education suggests that seminars should be conducted by multi-disciplinary teams that might include physical planners, anthropologists, small-scale industry experts, architects, civil engineers, and other professionals where appropriate. Since the seminars would be directed toward solving the resettlement and planning problems of the new community, they should address themselves to specific issues as a means of not only educating the community but also of arriving at tentative solutions and guidelines for the process of resettlement and the final planning objectives.

Land Simulation Gaming. The next logical step would be to move to a land use simulation game in order to test the concepts arising out of the seminar discussions. Implementation

procedures as well as disposition of land areas may be visually comprehended and assessed as a second step in arriving at a final plan. The planning game can be an easy and inexpensive activity if the rules are simple and the playing pieces are made by the settlers. One such game played in a Manila squatter community used a large cardboard sheet ruled into squares representing 100 m2 areas and an appropriate number of cardboard rectangular blocks representing dwelling units. The blocks were made to the same scale as the squares and could be stacked into high rise buildings, arranged in rows for row housing, paired for duplexes or placed individually for detached houses. Obviously arbitrary dimensions such as floor area of the dwelling unit would be subject to modifications during the final design stages. Physical constraints such as boundaries, abrupt changes in level, roads and so forth can be plotted on the cardboard grid at the appropriate scale. Finally, the tentative program derived from the seminars which may include recommendations on acceptable densities, circulation modes, community facilities, open spaces, etc. can be discussed during a series of meetings involving, at one time or another, all adults in the settlement. Professional assistance is also advisable at this stage to monitor decisions from a legal and technical standpoint so that the final solution will be acceptable to the majority of the community as well as to the appropriate government agencies concerned.

Plan Making. Using the final game model as a guide, a final plan may then be drawn up. Man-made and natural ecological relationships may be examined as a plan check to determine if all resources have been optimized. Phased construction activities may be plotted and scheduled and dimensions coordinated and completed between houses, lots, compounds and roads.

Mechanisms. Probably the most complex aspect of self-help community development is devising an equitable and efficient method of accounting for capital distribution and self-help contributions of labour. Misunderstanding and disagreement within a community on how to solve this problem is one of the basic causes for failure of self-help communities. Particular care should be taken, therefore, in arriving at a community consensus on the appropriate method. This topic coulc be included in the seminar phase of planning.

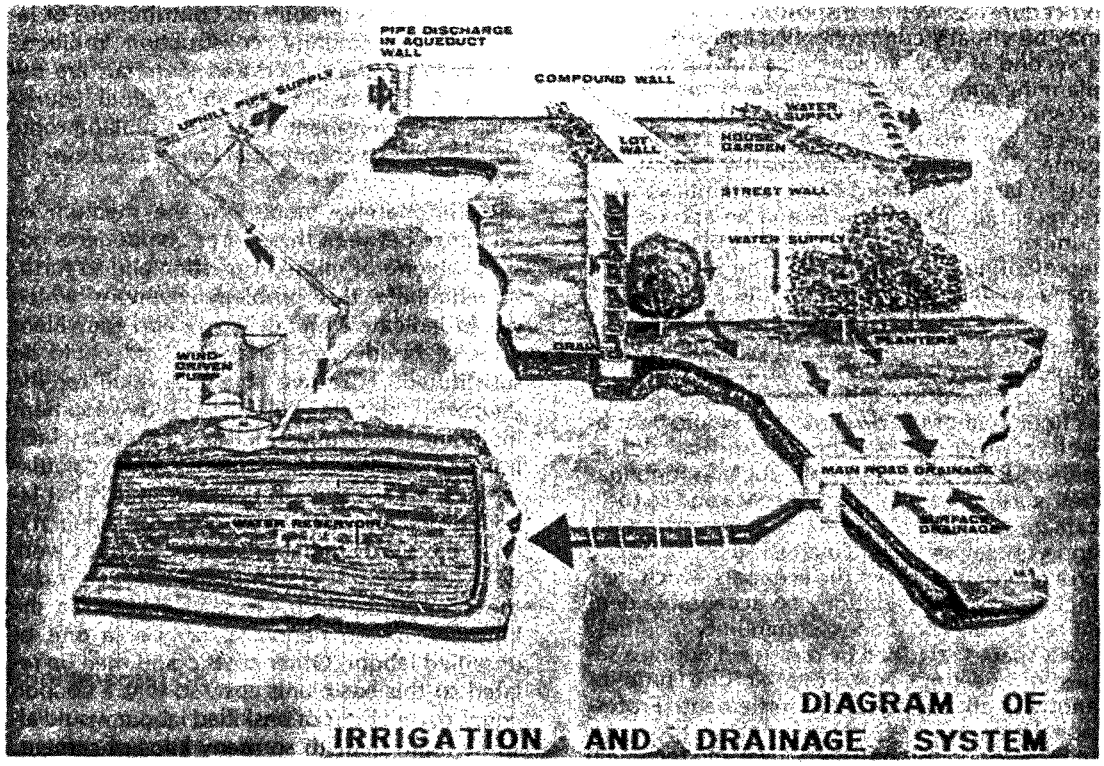
If a self-help community project is considered in economic terms, the settler can be considered both a consumer of building materials that are used to build his house and a producer of goods through his contributions of labour to community construction projects. Funds to purchase land and materials are necessarily obtained from an external source such as government agencies, philanthropic contributors or commercial loan institutions.

Unfortunately, money as the medium of exchange between these three components poses problems of misappropriation and so forth. To eliminate this problem, coupons which would indicate a unit of labour and equivalent units of building materials or land could be substituted. To arrive at a par value for the coupons, the total costs of the development including land, infrastructure community facilities, housing and all labour could be calculated at market value. This would imply that labour costs, although actually of a self-help nature, have a negotiable value based on work done by the settler. For convenience's sake, the coupon par value could be based on the lowest common denominator, i.e. a unit of unskilled labour. Other costs could then be related to this basic unit cost, so that a coupon equal to one hour of unskilled labour would also be equivalent to so many kilos of cement, board feet of lumber, square meters of land and so forth.

The number of negotiable coupons would be calculated by extracting labour (self-help) costs from the total cost since this exactly represents the labour input by the settlers. A certain portion of labour by each settler is specifically allocated to constructing his own house and does not represent a contribution to the community as a whole. This portion of the labour cost, therefore, would have to be deducted from total labour costs as non-negotiable with respect to purchasing materials or land.

Thus, for work on community projects, a settler would receive a certain number of coupons which could be exchanged through a community, commercial or government outlet, to acquire building materials for his house or credit toward the purchase of his lot at a predetermined market value.

If this plan of implementation employs the compound as a module of phased construction, coupons could also be used as a means of measuring work completed by individuals and families working as part of the compound



construction crew. To discourage malingering, the coupons could also have a "task completed" unit of measurement. Equivalency in this case could measure time required to complete a certain task divided into the appropriate number of coupons.

For example, if 80 man-days are required to complete one house, then each household in a compound would have to contribute 80 man-days of labour toward constructing all houses in the compound if they are to be constructed as a group. If one family elects to specialize in casting and erecting concrete block walls and the task completion time for this part of the construction process is 20 man-days per house, then the labour obligation to the compound of that household would be discharged when the walls for four houses were completed.

The question of interchangeability between coupons earned for work on community projects and those issued for completion of compound construction tasks arises since the first are used to earn credit to purchase land or materials and the latter to discharge obligations toward completing housing units in cooperative housing construction in the compound. However, certain instances may arise in which a family forming part of a compound group cannot or will not contribute labour to earn coupons to discharge its obligation to the compound housing cooperative. An option to hire a surrogate or enlist the aid of friends to fulfill this obligation would imply that coupons may be earned by hiring another, thus imparting a fair market value to the coupon. Coupons earned for work on community infrastructure, however, could remain an option for those settlers who choose this method to acquire credit toward the purchase of their lot or building materials. Coupons earned for completing the labour on housing and compound construction, however, would not entitle the holder to purchase building materials since they represent labour on the holder's own house. When submitting coupons for credit toward building materials or lot purchase, therefore, the appropriate number of coupons equal to construction of the holder's own house must be deducted.

Acquisition of skills. While construction techniques have been simplified, a certain degree of experience and skill is required to build even the considerably modified houses and infrastructure of that self-help settlement. Thus a program to teach skills in construction

is basic to a self-help program. Conventional instruction, which relies largely on verbal instruction, may not be appropriate in this instance because of the need to obtain shelter as quickly as possible. Furthermore, *en masse* instruction and construction lead to many problems of administration and logistics. For this reason, the compound element both as a learning/teaching and construction unit is proposed. The techniques for building and simultaneously disseminating construction skills is a pyramid sequence, which operates as follows:

Selected settlers will construct, under professional supervisors, prototype houses and components of the compound units. After mastering techniques of construction, and the ordering of materials in proper quantities, the trained settlers will then be dispersed to train and supervise predetermined groups of settler households in the construction of their houses. Each group will be located in a physically defined area called a compound and will cooperatively construct all houses for their group simultaneously. This method will permit a certain amount of building specialization to be generated within the groups.

When the first compound groups have completed their homes, a selected number of settlers from these now settled groups, who have mastered the construction techniques, will then undertake to train and supervise succeeding compound groups. This process is then repeated until all settlers are housed.

Construction of Housing. The pyramid sequencing of construction of housing using the compound as the increment of resettlement permits quantity discounts on building materials, specialization in construction, and trained supervision to be made available to all settlers building their houses. Security during construction is more easily ensured since one individual from the compound group may police the properties and materials of the entire compound. Finally, the graduated increase in the tempo of resettlement achieved through the pyramid sequence permits early identification and control of social and physical problems which often occur during resettlement.

Infrastructure. While conventional subdivision development procedures call for construction of most (if not all) infrastructure before housing starts, conditions in self-help resettlement projects often do not permit this (oftentimes extravagant) procedure. Shelter is often the first requirement to be met in resettlement projects with infrastructure relegated to a lower priority, often resulting in incomplete or inadequate roads, drains and sewers.

To ensure orderly development of both housing and infrastructure, they might be linked together so that the construction of infrastructure and adjoining compounds proceeds simultaneously. Assuming a geographical sequencing to parallel the pyramid sequencing, a resettlement could proceed in a linear fashion in which compounds and infrastructure facilities could be simultaneously completed in a sequence starting from a point closest to the access road to the resettlement site.

Simultaneous construction of infrastructure and compounds could also provide settlers with an opportunity to earn coupons on a regular basis for work on the infrastructure in order to purchase building materials to construct their housing and compounds.

THE ANTIPOLO EXPERIMENT

To test the model, an experimental project is now underway in Antipolo, a suburb on the outskirts of Manila in the Philippines. The project is sponsored by Samahang Bagong Buhay Foundation (SBB), a philanthropic organization whose objective is to help low-income and displaced families and communities to reestablish themselves socially, culturally and economically. The 5.08 hectare site in Antipolo is presently overgrown with underbrush and wild grass. A few settlers have already built randomly-placed houses on parts of the site, thus complicating the process of any future rational subdivision of land. An irregularly shaped site and abrupt changes in contour levels further complicate efficient use of the land. A gully which traverses the site provides drainage for adjacent pig farms and surrounding uphill lands and therefore presents a health and flood hazard.

Title to the site is held by the Samahang Bagong Buhay Foundation, which purchased the land from the Diocese of Malaybalay, Bukidnon, at a fair market price. Funds for the purchase were raised largely by overseas private donations. Present and intended settlers are mainly settlers evicted from a privately owned urban site in Mandaluyong, a centrally located suburb of Manila. To help preserve

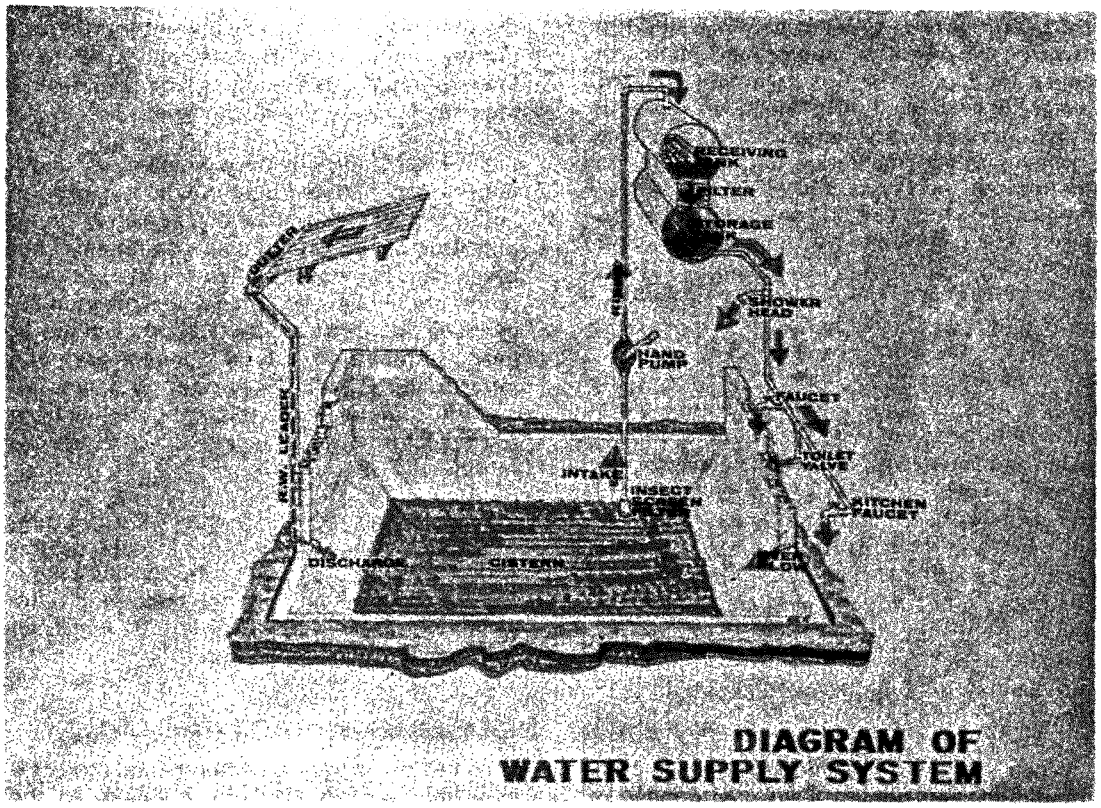


DIAGRAM OF WATER SUPPLY SYSTEM

their identity as a community, the relocated settlers have retained the name of their old community, Pleasant Hills, for their new settlement in Antipolo.

The Pleasant Hills project follows in principle the physical planning concepts outlined in a previous section with lots of 90 square meters ranging in width from five to seven meters and all compounds, which range in size from four to 20 arranged to conform to the natural drainage contours of the site.

Financing the Project. While a variety of methods for financing housing development exist, the following scheme by the Samahang Bagong Buhay Foundation (SBB) for a site in Antipolo, Metro Manila, may be of interest since it relies on private and conventional financing rather than government subsidies or grants and utilizes the labour and skills of the settlers as a capital asset.

Initial funding to purchase land was raised by private subscription. Funds for materials to build houses, infrastructure and community facilities on the other hand, are to be obtained from a commercial institution on a short term note using the land as security. During the construction period, which is expected to extend over a period of months before all housing and infrastructure are completed, the interim funding will be used to purchase construction materials. The settlers in turn, will use their coupons earned for infrastructure construction to purchase materials to build their houses and to make payments on a lot. Lot costs, to the settlers in this instance would of course consist of land cost plus material cost for infrastructure and community facilities divided by the number of lots in the subdivision.

Upon completion of housing and infrastructure and after the settlers have had a house and lot assigned to them through a lottery system, they may apply to a mortgage institution for a mortgage using the lot assigned to them plus the completed house as security. Since the market value of the house and lot may be expected to be much higher than the actual cost because of the self-help aspect, the mortgage is expected to approximate the total cost of house and lot. And since the infrastructure and community facilities and material costs are already included in the cost of the lot, the mortgage on the house may be expected to absorb the cost of infrastructure also.

With the sum obtained from the mortgage, the settler may retire any outstanding obligation to SBB on his lot or materials used to construct the house. Any surplus mortgage funds remaining after discharging obligations to SBB may be used for other personal expenditures or business investments or an early repayment of part of mortgage obligation.

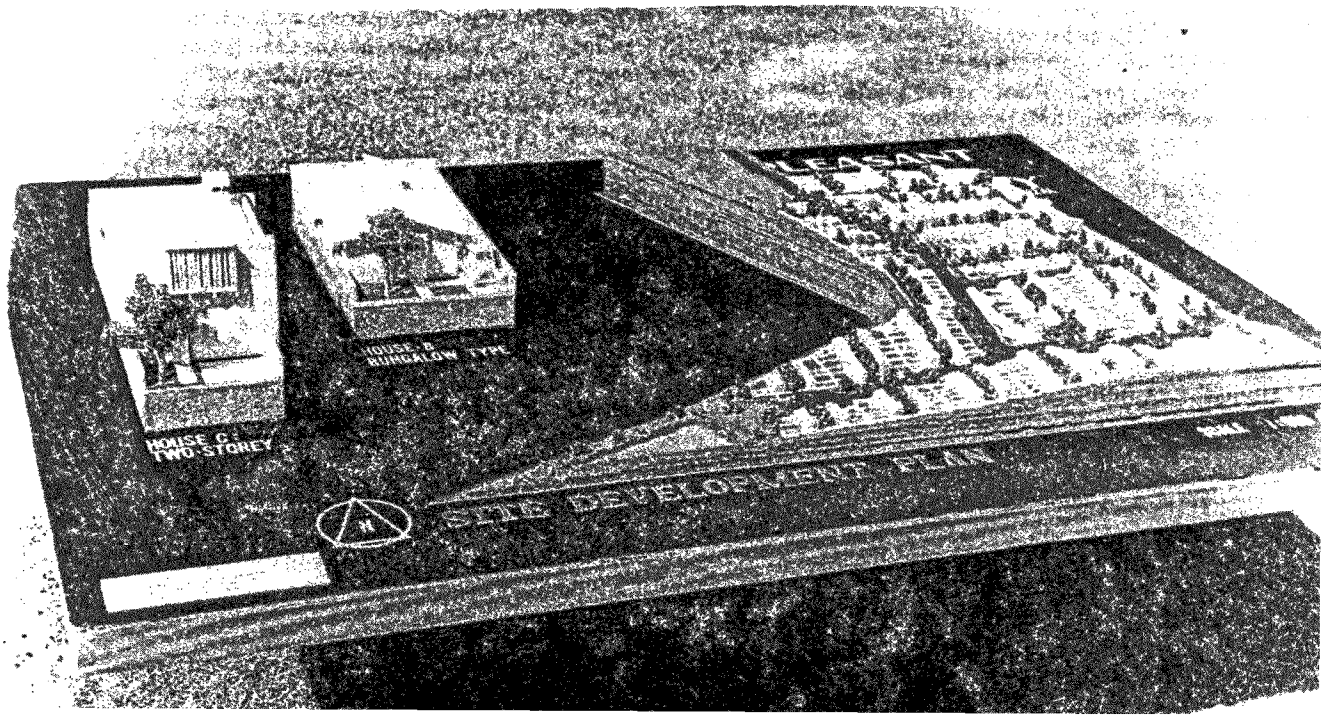
SBB is then able, using the redeemed loans to the settlers, to retire interim loans and other obligations and to retain any surplus to establish a revolving fund to finance future similar developments.

Social and Political Considerations

Typical squatter communities in the Philippines are often patterned after the rural barrio or village. Transformed into urban terms, the city barrio retains its rural characteristics but may have an additional sub-unit called the block which may be composed of from 50 to 300 family units. Lately, squatter communities have been incorporated by the national government into the barangay/zone system, patterned after a traditional Philippine political/social institution which existed prior to the Spanish conquest of the Philippines. This more centralized national organization provides a convenient vehicle to help squatter communities enter the legitimate community. A third type of community organization utilizes the cooperative as a means of coordinating squatter community activities. External assistance through public or private agencies is often required to sustain this type of organization.

In all cases, however, the relocation or rehabilitation process should be carried out under the direction of the existing squatter settlement government. It is essential, therefore, to preserve and reinforce existing community organization structure and social coherence. Following this pattern, the Pleasant Hills settlers established a housing cooperative sanctioned by the National Cooperatives Administration Office prior to the commencement of relocation. Through their housing cooperative, the settlers, threatened with eviction from their Mandaluyong site, sought the assistance of Samahang Bagong Buhay to locate a new resettlement site. Before, during and after the initial resettlement, the squatters' housing cooperative acted jointly with SBB in land acquisition, subdivision and development of community facilities. Of late, the new Pleasant Hills community also came under the aegis of the National Barangay System. This, combined with the near demise of the housing cooperative due to insolvency, has led to some confusion and a hiatus in community self governance. At present, a vestigial housing cooperative exists and works with SBB on the housing issue. Collaterally, a politically- conscious barangay organization is representing the settlers in the local and national governments.

In spite of these problems, work on the construction of the second and third house prototypes is proceeding and plans are ready for the construction of the first compound. At this point, the effectiveness of the model will be more apparent and corrections to procedures if required may be made. ●



HABITAT 1976: A REPORT

by

Jose Conrado Benitez

Background

The Philippine participation at HABITAT was the climax of several years of preparatory work. Shortly after the UN Conference on Human Environment in Stockholm in 1972, which recommended that a conference on human settlements be held, the Philippine government became one of the first, if not the first, country to officially recognize human settlements as a major concern of government. Through an Executive Order, the Task Force on Human Settlements (TFHS) was established. The TFHS was the Philippine response to the international effort to focus attention on the plight of millions of people living in miserable and substandard condition in existing human settlements.

On the international level, a secretariat was established by the United Nations with Mr. Enrique Peñalosa of Colombia as the Secretary-General. A Preparatory Committee (made up of 56 countries) was formed which included the Philippines. The Preparatory Committee advised the Secretary-General on the structure and substantive aspects of the Conference. Three preparatory conferences, three experts/consultants' meetings and three regional preparatory conferences were held.

At the national level, the TFHS focused its main program on the dimensions of planning in order to attain the desired goal of improved human settlements. Framework plans were prepared for the country, as well as for the Manila Bay Region and other selected areas. Environmental considerations were introduced in the planning process. A housing program was likewise prepared. Because of the experience acquired at the national and local levels with regard to problems, of human settlements the TFHS was able to play a substantial part in its contributions to the preparatory process for HABITAT.

HABITAT STRUCTURE

The HABITAT Conference was held in Vancouver, Canada from 31 May to 11 June 1976. One plenary session and three committee sessions were held simultaneously to discuss the following:

Plenary—National Statements
—Reports of Committees
Committee I—Declaration of Principles and Institutional Arrangements for International Cooperation
Committee II—Settlement Policies and Strategies
—Settlement Planning
—Institutions and Management
Committee III—Shelter, Infrastructure and Services
—Land
—Public Participation.

The Philippines was elected as one of the vice-presidents of the Conference; Canada assumed the presidency. Ambassador Helena Z. Benitez as Chairman of the delegation, assumed the position of vice-president. The Philippines was likewise elected as chairman of the Group of 77 in Committee I (Ambassador Leandro Verceles); and also as member of the working groups for Committees I and II.*

Highlight of Philippine participation was the national statement delivered by First Lady and Metro Manila Governor, Mrs. Imelda Romualdez Marcos during the plenary session on June

*Other members of the Philippine delegation included: Dr. Onofre D. Corpuz, Co-Chairman, Ambassador Privado Jimenez, NEDA Deputy Director General Nicanor Fuentes, Secretary Ronaldo Zamora, Director Silvestre Sarmiento, Director Ramon Cassanova, Col. Jaime Venago, Mrs. Laura Lising, Mrs. Veronica Villavicencio, Mr. Jose P. Cabazor, and Mr. Nathaniel von Einsiedel.

7. She spoke on the Philippine experiment insofar as human settlements planning was concerned, and of the government's firm commitment to uplift the quality of life of Filipinos.

DECLARATION OF PRINCIPLES

The 1976 Vancouver Declaration on Human Settlements embodied the set of general principles and guidelines for action in the field of human settlements. In its preamble, it recognized the unacceptable circumstances in which a vast number of people live today. These conditions are brought about and further aggravated by inequitable economic growth; population growth; social, economic, ecological and environmental deterioration; uncontrolled urbanization, etc.

The Declaration proposed "opportunities and solutions" for ameliorating such conditions. It started with recommending the formulation of human settlement policies aimed at improving the quality of life beginning with the satisfaction of basic needs, especially of the most disadvantaged people. The Declaration gave priority to the goal of self-reliance, to the right of States to control land for the benefit of the public welfare, to environmental protection, to the need for a new international economic order, to putting an end to the waste and misuse of resources in war and armaments.

The Declaration further recommended guidelines for action for governments to take, i.e.,to adopt and incorporate human settlement policies in developmental efforts, to attempt to minimize urban-rural disparities, to ensure the attainment of shelter and services by its people, to the transfer of technology adapted to the needs of developing countries, etc.

The Vancouver declaration could not gain a consensus, but passed by a vote of 89 in favor, 15 against and 10 abstentions. Those who voted against the Declaration objected on the basis of a principle calling for governments to condemn forms of racism, including zionism. Some governments could not accept the view that zionism was a form of racial discrimination. A number of countries felt that they could not support the Declaration because it contained political implications which they considered outside the scope of the conference.

The Philippines, as chairman of the Group of 77, was most active in the deliberations and negotiations. It was the draft Declaration prepared by the Group of 77 that became the final Vancouver Declaration.

RECOMMENDATIONS FOR NATIONAL ACTION

Because of the nature of the human settlements issue, recommendations for national action, placed within the perspective of international principles and cooperation, were the major outcome of the Conference. Human settlement programs must, of necessity, take place within national boundaries; it is ultimately each country's commitment and efforts towards the improvement of its quality of life, that would determine the success or failure of the human settlements approach.

Within the scope of a national program, the following set of interrelated themes were agreed upon by governments as the scope and concern of human settlements.

Settlement policies and strategies

The need to initiate appropriate settlement policies and strategies from the highest levels of policy-making, was pointed out. National policies for economic and social development can no longer continue to ignore the role of human settlements as well as the environment. The content of this national human settlements policy was generally agreed upon as the promotion of developmental goals along spatial dimensions. It was also recognized that human settlement policies could serve as powerful tools for a more equitable distribution of income and opportunities.

Settlement Planning

Planning was defined as a process used to achieve the goals and objectives of development through the rational and efficient use of available resources. It was recognized that such a process should be continuous with a built-in feedback mechanism for review and revision of plans.

Settlement planning should be aimed at promoting balanced development for regions or at minimizing urban-rural disparities, utilizing indigenous technology and considering local socio-cultural patterns and values in the planning process.

A hierarchical ordering of planning human settlements differentiates the various scales of geographical coverage: national, regional, local and neighborhood. The differences in these levels were discussed in greater detail.

Institutions and Management

Recommendations under this heading included the political, administrative and technical structures; legislation and regulatory instruments; and formal procedures for harnessing resources. Because of different scales of settlement planning, a diversified system of institutions is needed.

It was agreed upon that there should be a national or ministerial institution responsible for the formulation and implementation of settlement policies and strategies. Management of settlements was likewise identified as an important element for viable and improved human settlements.

Shelter, Infrastructure and Services

Planned human settlements can contribute to improving living conditions. However, it was recognized that the needs for shelter, infrastructure and services would almost always be greater than the economic resources available. Self-help methods by which all available resources are mobilized were recommended in view of the above-noted constraints.

Shelter, infrastructure and services, whenever possible, should be planned in a comprehensive manner. To plan these in isolation will be more costly and possibly less appropriate. Comprehensive planning can be attained through prior announced decisions, advance planning and lead time to provide the appropriate framework; the formation of consortia and cooperative arrangements among the major development agencies; and the development of new budgetary techniques to reflect changes in programmes over time, to present financial data in spatial terms, and to secure budgets in an integrated way.

Land

There is a need to reorient widely-held attitudes toward land as a commodity of trade. Land is not something produced by man; it is a limited resource and should thus be planned and used for the long-term interests of the community.

One of the more important recommendations of the Conference involved the return of unearned values on land to the community:

> "The unearned increment resulting from the rise in land values resulting from change in use of land, from public investment or decision or due to the general growth of the community must be subject to appropriate recapture by public bodies (the community), unless the situation calls for other additional measures such as new patterns of ownership, the general acquisition of land by public bodies."

Public Participation

The Conference recognized the importance of public participation especially in a field as comprehensive and far-reaching as human settlements. The cooperative effort of the people themselves, their transformation from passive receptors to active subjects and contributors was seen as a necessary component in the human settlements planning process.

International Cooperation

The Conference passed the recommendations for international cooperation, but deferred the question of institutional linkage to the General Assembly's 31st session.

The draft resolution recommended the establishment of a United Nations intergovernmental body for human settlements composed of 58 member states. A secretariat would be formed to serve as a focal point for human settlements action, and would be composed of the Centre for Housing Building and Planning, the appropriate section in the United Nations Environment Program, the UN Habitat and Human Settlements Foundation, and selected posts from the Department of Economic and Social Affairs.

Among the functions of this agency would be to support countries to increase and improve efforts in human settlements, to promote international cooperation for increasing resources to developing countries and to strengthen cooperation between developing countries. This agency would need to advise on policy, educate and train, research and develop, initiate demonstration projects, etc.

Dean Viloria reassumes post

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Enrollment, faculty increase as new school year starts

This semester 103 students have registered at the Institute of Environmental Planning. New enrollees number 48, but these, only 10 are full-time students. Meanwhile, the faculty has increased its ranks by one. The appointment of Miss Adrienne Agpalza, a graduate of U. P. and U. C. L. A. with a Master's Degree in Anthropology brings the faculty's total number to 19. Miss Agpalza also holds the Diploma in Urban Studies from the University College, London. Prior to her appointment to the faculty, she had been for some time a Research Associate in the Research Staff of the Institute.

Habitat '76 . . .

Emphasis was given to implementing regional and sub-regional programmes. The convening of regional meetings to establish guidelines for coordinating action was also recommended and adopted.

As mentioned above, the question of the organization link—whether the secretariat should fall under the Department of Economic and Social Affairs, or under the United Nations Environmental Programme—was referred to the General Assembly for decision. The selection of the site of the proposed human settlements unit was likewise referred to the General Assembly.

Summary

Habitat concluded on a hopeful note, despite the controversy over the Declaration. The Recommendations for National Action are "revolutionary in scope" and it is at this level that the success or failure of HABITAT will be determined. Ultimately, it will be the political will, initiative and efforts of governments that will determine whether the quality and dignity of life in human settlements around the world will be improved. ●

Dean Leandro A. Viloria has returned to the Institute of Environment Planning after an absence of two years. He arrived in the Philippines from Kuala Lumpur on July 8, after an assignment with the Asian Center for Development Administration, as a United Nations expert. Dr. Viloria has since assumed the Deanship of the Institute, a position which he held prior to his U. N. appointment in Kuala Lumpur. The U. P. Board of Regents approved his reappointment on Sept. 2, 1976.

Nine New Planners

Nine MEP students graduated from the Institute in June of this year, after passing their written and oral comprehensive examinations. The new graduates are: Balancio, Evelyn F.; Cabal, Veronica B.; Jorge, Oscar Jesus B.; Liberato, Armando S.; Pechardo, Leonora R.; Paralejo, Ramon L.; Regalado, Teresita B.; Ruiz, Nelia; and Santillan, Jr. Felipe A.

These students are among the last to graduate from the Master in Environmental Planning Course which has since been phased out and replaced by the Master in Urban and Regional Planning course.

Back from Japan

Llena Buenvenida, a research associate at the Institute, is back after completing a six-month course at the United Nations' Center for Regional Development in Nagoya, Japan. She was sponsored by the Economic and Social Commission for Asia and the Pacific (ESCAP) to represent the IEP in a course on Comprehensive Regional Development. The course had 28 participants, four of whom were from the Philippines and the rest from Indonesia, Iran, Japan, Malaysia, Nepal, Papua New Guinea, Pakistan and Thailand. Lectures, discussions and field trips to several places of interest in the Aichi Prefecture in Japan took up the first part of the course. The second and main part was the actual planning exercise of preparing a comprehensive plan for Sind Province in Pakistan.

Manila hosts International Conference on the Survival of Humankind

The International Conference on the Survival of Humankind brought to Manila approximately 125 scientists and experts from the academic and research institutes of some 28 countries to meet with 500 of their local counterparts.

The Conference. held on Sept. 6-10 at the newly inaugurated Philippine International Convention Center, discussed the all-embracing theme of "the practical applications of science to mankind's survival problems", and had, as its special focus, the Philippine experiment. Among the numerous areas covered were food, energy, population, nutrition and health, housing and urban development, technology transfer and utilization, education and communication, natural disasters and environmental protection, planning management and decision-making.

A rationale for this assemblage of scientific brilliance was offered by the First Lady and Governor of Metropolitan Manila, Mrs. Imelda R. Marcos, in her opening speech when she noted that because of the wars that Manila found itself plunged into, it "grew without the luxury of planning, for the struggle was for survival." This 5-day conference was to make up for all those years of deprivation.

After five days of discussions by what may have been the largest gathering of scientific minds Manila has seen or will see again for a long time, and after what must have been mountains of paperwork, the conference came to a close on Sept. 10, and recommendations were submitted to the President. President Marcos immediately directed his cabinet to study the proposals submitted by the conference to see how they could be used by the country. Judging from the topics of the discussions, the conference may have major implications for urban and regional planning; however, it will take some time before all the papers that were prepared can be reviewed and analyzed.

As a post script to the conference, the Technology Resource Center in Makati was established. The Center, inaugurated on September 11, is designed to be a permanent institution to implement the conference's recommendations.

Meier lectures on "Practical Planning Approaches of Large-Scale Urban Developments in Developing Countries"

In keeping with IEP's efforts to attune itself with the different planning concepts in practice, it has, as a continuing program, invited several practitioners to discuss their ideas with the students and faculty. Among the latest to speak at the institute was Dr. Richard L. Meier, a professor of Environmental Design at the University of California at Berkeley, who was here to attend the International Conference on the Survival of Humankind. Dr. Meier is acquainted with a wide array of planning concepts in use throughout the world, which seem to be working out successfully.

His talk at the Institute was on "Practical Planning Approaches of Large-Scale Urban Developments in Developing Countries." Of particular interest to the students and faculty was his exposition of several cases of practical solutions to planning problems in Asian countries. These solutions were so painfully simple, that the audience could not immediately respond to his talk. Dr. Meier pointed out that often, the best planning concepts are the simplest ones, and solutions to planning problems could almost always be arrived at through common sense. Such an innovative approach to planning could be very useful here where there is a tendency to dismiss less than complicated solutions as too simplistic.

Dr. Meier has published extensively. His latest book, *Planning for an Urban World,* (MIT Press, 1974) is reviewed in this issue.

AT LOS BAÑOS
A New College Rises

A new college has evolved in the University of the Philippines at Los Baños. The College of Human Ecology was established to meet the challenge that concerns human development in the context of his environment—this, as a fulfillment of the university's role in national development.

The college focuses on man and his interrelationship with the total environment, and has as its operational areas, the following:

1. Human development population studies—the development of human behavior as an individual and member of the family and larger social systems, and the study of population issues and policies and their effects and implications on man and his environment.

   1.1 Human nutrition and foods—nutrition and foods and their relationships to health and the well-being of man, the family and larger social systems.

2. Resource and technology management—the study of the structure and functioning of natural and artificial ecosystems, the relationship of these systems and man, and policy formulations on resource use and management.

3. Environmental planning and analysis—the analysis, modification and control of man's environment, emphasizing the space and material aspects of the total environment especially as these relate to the psycho-social, moral, ethical and cultural behavior of man under differing environmental conditions.

   Development Education and Community Services—the design and implementation of effective programs and services that contribute to man's development and the enhancement of the quality of life.

The college offers both undergraduate and graduate curricular programs. In the undergraduate level are two new programs:

—B. Sc. Human Ecology—which is designed to provide the students the knowledge, skills and abilities as well as the necessary attitudes and values in the study of man and his environment. The courses are inter-disciplinary, and are oriented towards the structuring and functioning of the environmental complexes.

—B. Sc. Environmental Science and Technology—which provides the training that will enable students to be knowledgeable in the application of natural sciences to the ecosystem.

Both courses will take four years to complete. Graduate courses in resource management and environmental analysis will be offered at a later date.

It is envisioned that the graduates in these programs will be equipped with the necessary knowledge to serve in the fields of development planning, resource technology, research, administration and teaching. The undergraduate program should be of special interest to future students in urban and regional planning, as it provides a relevant basic course for those considering entry to the Institute of Environmental Planning in the masteral program.

FORTHCOMING EVENTS

The next few months will witness a number of major developments that will profoundly affect the Institute and its public. These are the creation of the UP Planning and Development Research Foundation, Inc.; the introduction of an innovative approach to the Institute's graduate program; and an intensification of its training activities.

UP Planning and Development Research Foundation, Inc.

A non-political, non-stock, non-profit corporation, the Foundation seeks to attain objectives that run along parallel lines with, and therefore reinforce the four-fold function of the Institute of Environmental Planning, namely graduate education, training research, and consultancy services.

As envisioned, the Foundation will establish scholarships and professorial chairs in the various fields and disciplines of planning. It also aims to provide assistance, financial or otherwise, to faculty members, alumni, and graduate students of UPIEP who propose to do research in planning and related activities.

Furthermore, the Foundation will hold workshops, seminars, educational campaigns, conferences, conventions, forums and symposia on matters of vital importance to planning. It will also initiate, sponsor, and support, promote, assist or conduct basic and applied research and development programs and projects in the various fields of environmental planning. Finally, it aims to provide consulting services to the public and private sectors, particularly in the fields of project evaluation or elaboration of projects.

Bringing the Classroom to the Agency

The Institute will soon launch an innovative approach to its graduate education and extension programs. This involves the holding of graduate courses in planning right in the agencies requesting such extension service. Literally bringing the classroom to the agency, the new program is in pursuance of the Institute's mandated function to help make available a pool of capable professional urban and regional planners.

This is also in consonance with the declared national policy "to strengthen and assist government agencies in the study of their development problems, to facilitate the realization of development proposals at all levels, and to improve human settlements and their environments by the integration of social, economic, physical and administrative considerations to produce coordinated and comprehensive development studies and plans."

Under the scheme, the UPIEP is responsible in assigning from its faculty, course coordinators who will take charge of inviting lecturers or delivering lectures themselves, and of making available instructional materials. On the other hand, the agency concerned will provide financial and physical support, including clerical and staff assistance.

The benefits of this innovative program will mutually accrue to the cooperating agency and the Institute. On the one hand, it affords agency officials and employees who are directly involved in development planning projects a chance to broaden their perspective by grounding themselves in planning theories and concepts. On the other hand, the faculty members assigned as coordinators will be exposed to actual planning activities thereby enabling them to integrate planning theory with practice.

On the whole, this will lead to the realization of the objective of the civil service to develop and retain a competent and efficient workforce in the light of the current development thrust of the government.

The first agency to benefit from this new scheme will be the Department of Public Works, Transportation and Communications with which the Institute has a long-standing working relationship. Classes in the DPWTC are targeted to start by summer of 1977.

Intensified Training Program

Even as the first Ten-Month Special Course in Urban and Regional Planning enters its second half, the Institute is already swamped with requests for reservations in the next year's session. Most of the reservations this time come from local governments, in contrast to the present group of participants who are mostly from national government agencies. At least three foreign counries have, so far, shown interest in the program and may send participants next year.

ABOUT THE AUTHORS

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WILLIAM P. PATERSON is Project Manager of the UNDP Special Fund Assistance Project and Visiting Professor at the Institute of Environmental Planning. He holds the degrees of B.A., B.S.W. (Social Work), and M. Sc. (Community and Regional Planning), all from the University of British Columbia, Canada. Following nine years as an urban planner in Canada, he joined the United Nations in 1962. He had served in the West Indies, East Africa, and the U.N. Headquarters in New York, before coming to the Philippines in 1973. Prior to his appointment to the Institute, he was the Project Manager for the Mindanao Regional Development Study in Davao from 1973 to 1975.

ALAN REW is a Visiting Research Associate at the Institute of Environmental Planning. He holds a Ph.D. in Anthropology and Sociology from the Australian National University, and is currently a Research Fellow of the Institute of Development Studies at the University of Sussex. He has held teaching and research positions at the Universities of Minnesota, Australia and New Guinea. The author of *Social Images in Urban New Guinea: a Study of Port Moresby,* Dr. Rew is presently conducting research on access to housing in Metro Manila.

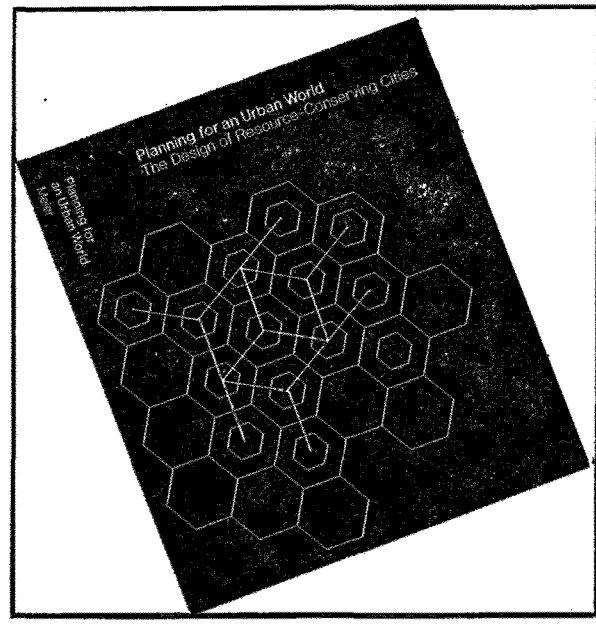
ASTEYA M. SANTIAGO is Associate Professor and Director of Graduate Studies at the Institute of Environmental Planning. She obtained her law degree (cum laude) in 1963 from the University of the Philippines. She has a Masters degree in Town and Country Planning from the University of Sydney which she finished in 1968 under a Colombo Plan Fellowship. In February 1976 she was awarded a travel grant by the United Nations to study planning law in Pakistan and in Nagoya, Japan.

MEHRETAB TEKIE is on the staff of the Planning and Project Development Office (PPDO) of the Department of Public Works, Transportation and Communications, as a land use planner. He is also part-time lecturer in land use planning at the Institute of Environmental Planning and in physical geography at UP College Manila. Mr. Tekie holds the degrees of B.A. (Geography) from the Haile Selassie University, 1969, and M. Sc. (Geography), from the University of the Philippines, 1974. Prior to his coming to the Philippines, Mr. Tekie had served as head of the Department of Geography at Prince Makonen Secondary School in Addis Ababa (1969-1972). He has also taken a course in Remote Sensing Imagery at the Bureau of Mines, Department of Natural Resources, Manila.

JOSE CONRADO BENITEZ is Executive Director of the then Task Force on Human Settlements, now Human Settlements Commission. A member of the Philippine delegation to HABITAT '76 in Vancouver, Dr. Benitez writes a report on the Philippine participation in that UN Conference as well as on the issues and recommendations as they relate to the Philippine human settlements program.

BOOK REVIEW

Richard L. Meter,
Planning for an Urban World:
The Design of Resource-Conserving Cities,
MIT Press, 1974



• **Marissa Pablo**

RICHARD MEIER, in his book *Planning for an Urban World: The Design of Resource-Conserving Cities,* has done something unique. Using a holistic approach, he succeeds in underlining the one characteristic of man most often buried under the interminable jargon of planning—ingenuity. Ingenuity, which is man's built-in capacity to recreate himself and to change and adapt to his environment, enables him to prevail over circumstances and to perpetuate his kind.

Thus Meier looks at the city as a "self-created environment that determines the continuation of the human species". To him, a city is a living system—an ecosystem—where different populations interact in various degrees and levels with each other, with materials, energy and information, creating in the process self-sustaining cultures.

But, contrary to an implicit assumption normally made by planners, resources for developmental use are not inexhaustible. Meier hypothesizes that with maximum utilization of the energy sources available for human disposal, the world can support a population of the magnitude eighteen times 10^9 at most.

This means that man's ingenuity must be directed not only to finding means of maximizing utilization of resources but also, and more importantly, to designing resource-conservation measures. This means also, that both affluent and developing countries will have to give up many of their present luxuries. For Westerners, this would mean cutting down space per head from thirty square meters to seven or eight. For the urbanizing Third World, it would mean skipping the brief period of conspicuous consumption enjoyed by earlier urbanized countries.

Meier then envisions "resource-conserving cities" as the logical design approach to the increasingly urban world, in the 21st century. With appropriate and adequate resource-conserving urban and transportation systems, Meier waxes optimistic that there is and will continue to be energy available for cities of gigantic proportions. For example, his scenario for the year 2050 which he paints, as it were, across a canvas that stretches from Ireland through Mauritius to China, portrays hundreds of cities able to sustain a population of ten to twenty million each. These giant urban complexes take the form of what the author calls "coalplexes" (urban industrial centers based on available

local deposits of at least twenty million tons of coal accessible by open-cast mining); or "nuplexes" (urban/industrial/agricultural complexes based on nuclear power); or may include hitherto untried features of urban living like offshore living based on the utilization—and conservation—of energy from the sea, surf and sun.

Meier's contribution to the body of planning knowledge is his realistic assessment of the politics and economics of scarcity as well as his description of the social adaptations that must be made in order to complement the new forms of technology required. An attractive feature of this book for Asian planners is that it deals extensively with the developing countries in Asia. However, one would doubt the feasibility of many of his suggestions given the political climate and the economic realities in may Asian countries today. The path of the economics of scarcity may not always, and in fact does not, run along parallel lines with that of the politics of scarcity in these areas. The adopted Westernized pace of consumption in Asia may serve functions that are as inconspicuous as their manifestations are conspicuous. In other words, the values of "saving face" may eventually be overcome by necessity. But that will take a great deal of overhauling the institutional supports of this particular value system.

One hopes that just as necessity is the mother of invention, it will also become father to socio-political innovation. ●

Republic of the Philippines
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